

TITLE OF THE INVENTION**DI-ARYL SUBSTITUTED PYRAZOLE MODULATORS OF METABOTROPIC GLUTAMATE RECEPTOR-5**

5

BACKGROUND OF THE INVENTION**FIELD OF THE INVENTION**

The present invention is directed to pyrazole compounds substituted with i) a heteroaryl ring and ii) another heteroaryl or aryl ring with at least one of the rings being further substituted with another ring. In particular, this invention is directed to pyrazole pyrazole compounds substituted directly, or by a bridge, with i) a heteroaryl moiety containing N adjacent to the point of connection of the heteroaryl and ii) another heteroaryl or aryl ring, with at least one of the rings being further substituted with another ring, which are metabotropic glutamate receptor – subtype 5 (“mGluR5”) modulators useful in the treatment of psychiatric and mood disorders such as, for example, schizophrenia, anxiety, depression, panic, bipolar disorder, and circadian rhythm disorders, as well as in the treatment of pain, Parkinson’s disease, cognitive dysfunction, epilepsy, obesity, drug addiction, drug abuse, drug withdrawal and other diseases.

20 **RELATED BACKGROUND**

A major excitatory neurotransmitter in the mammalian nervous system is the glutamate molecule, which binds to neurons, thereby activating cell surface receptors. Such surface receptors are characterized as either ionotropic or metabotropic glutamate receptors. The metabotropic glutamate receptors (“mGluR”) are G protein-coupled receptors that activate intracellular second messenger systems when bound to glutamate. Activation of mGluR results in a variety of cellular responses. In particular, mGluR1 and mGluR5 activate phospholipase C, which is followed by mobilizing intracellular calcium.

Modulation of metabotropic glutamate receptor subtype 5 (mGluR5) is useful in the treatment of diseases that affect the nervous system (see for example W.P.J.M Spooren et al., 30 *Trends Pharmacol. Sci.*, 22:331-337 (2001) and references cited therein). For example, recent evidence demonstrates the involvement of mGluR5 in nociceptive processes and that modulation of mGluR5 using mGluR5-selective compounds is useful in the treatment of various pain states, including acute, persistent and chronic pain [K Walker et al., *Neuropharmacology*, 40:1-9 (2001); F. Bordi, A. Ugolini *Brain Res.*, 871:223-233 (2001)], inflammatory pain [K Walker et

al., *Neuropharmacology*, 40:10-19 (2001); Bhave et al. *Nature Neurosci.* 4:417-423 (2001)] and neuropathic pain [Dogru et al. *Neurosci. Lett.* 292:115-118 (2000)].

Further evidence supports the use of modulators of mGluR5 in the treatment of psychiatric and neurological disorders. For example, mGluR5-selective compounds such as 2-methyl-6-(phenylethynyl)-pyridine ("MPEP") are effective in animal models of mood disorders, including anxiety and depression [W.P.J.M Spooren et al., *J. Pharmacol. Exp. Ther.*, 295:1267-1275 (2000); E. Tatarczynska et al, *Brit. J. Pharmacol.*, 132:1423-1430 (2001); A. Kłodzynska et al, *Pol. J. Pharmacol.*, 132:1423-1430 (2001)]. Gene expression data from humans indicate that modulation of mGluR5 may be useful for the treatment of schizophrenia [T. Ohnuma et al, *Mol. Brain. Res.*, 56:207-217 (1998); ibid, *Mol. Brain. Res.*, 85:24-31 (2000)]. Studies have also shown a role for mGluR5, and the potential utility of mGluR5-modulatory compounds, in the treatment of movement disorders such as Parkinson's disease [W.P.J.M Spooren et al., *Europ. J. Pharmacol.* 406:403-410 (2000); H. Awad et al., *J. Neurosci.* 20:7871-7879 (2000); K. Ossawa et al. *Neuropharmacol.* 41:413-420 (2001)]. Other research supports a role for mGluR5 modulation in the treatment of cognitive dysfunction [G. Riedel et al, *Neuropharmacol.* 39:1943-1951 (2000)], epilepsy [A. Chapman et al, *Neuropharmacol.* 39:1567-1574 (2000)] and neuroprotection [V. Bruno et al, *Neuropharmacol.* 39:2223-2230 (2000)]. Studies with mGluR5 knockout mice and MPEP also suggest that modulation of these receptors may be useful in the treatment of drug addiction, drug abuse and drug withdrawal [C. Chiamulera et al. *Nature Neurosci.* 4:873-874 (2001)].

International Patent Publication WO 01/12627 and WO 99/26927 describe heteropolycyclic compounds and their use as metabotropic glutamate receptor antagonists.

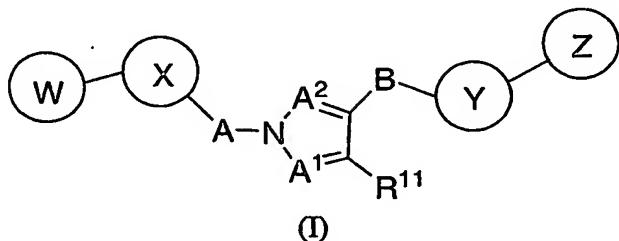
M.A. Halcrow et al., *J. Chem. Soc., Dalton Trans.*, 21:4025-4036(1997) describes the synthesis of 3-(2,5-dimethoxyphenyl)-1-(2-pyridyl)pyrazole. G. Denys et al., *Kapsukasa, Zh. Org. Khim.*, 13(1):199-204(1977) describes the conversion of 1-(2-pyridyl)-3-pyrazolines to 1-(2-pyridyl)-3-pyrazoles.

Compounds that include ringed systems are described by various investigators as effective for a variety of therapies and utilities. For example, International Patent Publication No. WO 98/25883 describes ketobenzamides as calpain inhibitors, European Patent Publication No. EP 811610 and U.S. Patent Nos. 5,679,712, 5,693,672 and 5,747,541 describe substituted benzoylguanidine sodium channel blockers, and U.S. Patent No. 5,736,297 describes ring systems useful as a photosensitive composition.

However, there remains a need for novel compounds and compositions that therapeutically inhibit mGluR5 with minimal side effects.

SUMMARY OF THE INVENTION

The present invention is directed to novel pyrazole compounds such as compounds of the formula (I):



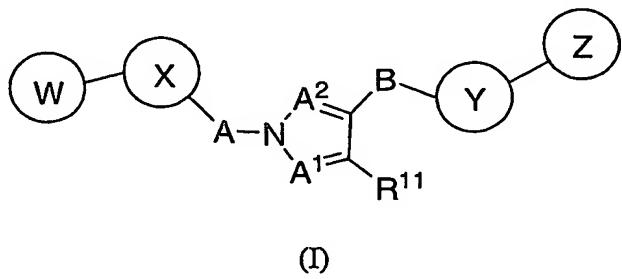
5

(where A, A1, A2, B, R11, W, X, Y and Z are as defined below) in which the pyrazole is substituted directly, or by a bridge, with i) a heteroaryl moiety containing N adjacent to the point of connection of the heteroaryl and ii) another heteroaryl or aryl ring, with at least one of the 10 rings being further substituted with another ring, which are metabotropic glutamate receptor – subtype 5 modulators useful in the treatment of psychiatric and mood disorders such as, for example, schizophrenia, anxiety, depression, panic, bipolar disorder, and circadian rhythm and 15 sleep disorders – such as shift-work induced sleep disorder or jet-lag, as well as in the treatment of pain, Parkinson's disease, cognitive dysfunction, epilepsy, obesity, drug addiction, drug abuse, drug withdrawal and other diseases. This invention also provides a pharmaceutical composition which includes an effective amount of the novel pyrazole compounds substituted with a 20 heteroaryl moiety, and a pharmaceutically acceptable carrier.

This invention further provides a method of treatment of psychiatric and mood disorders such as, for example, schizophrenia, anxiety, depression, panic, bipolar disorder, and 25 circadian rhythm and sleep disorders – such as shift-work induced sleep disorder or jet-lag, as well as a method of treatment of pain, Parkinson's disease, cognitive dysfunction, epilepsy, obesity, drug addiction, drug abuse and drug withdrawal by the administration of an effective amount of the novel pyrazole compounds substituted with a heteroaryl moiety.

25 DETAILED DESCRIPTION OF THE INVENTION

A compound of this invention is represented by Formula (I):



or a pharmaceutically acceptable salt thereof, wherein:

X and Y each independently is aryl or heteroaryl wherein at least one of X and Y is a heteroaryl with N adjacent to the position of attachment to A or B respectively;

X is optionally substituted with 1-7 independent halogen, -CN, NO₂, -C₁₋₆alkyl,
 5 -C₁₋₆alkenyl, -C₁₋₆alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -SO₂R⁴, -SO₂NR¹R²,
 10 -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R² substituents, wherein optionally two substituents are combined to form a cycloalkyl or heterocycloalkyl ring fused to X; wherein the -C₁₋₆alkyl substituent, cycloalkyl ring, or heterocycloalkyl ring each optionally is further
 15 substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), or -N(C₀₋₆alkyl)(aryl) groups;

R¹, R², and R³ each independently is -C₀₋₆alkyl, -C₃₋₇cycloalkyl, heteroaryl or aryl; any of which is optionally substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl,
 15 -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), -N(C₀₋₆alkyl)(aryl) substituents;

R⁴ is -C₁₋₆alkyl, -C₃₋₇cycloalkyl, heteroaryl or aryl; optionally substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), -N(C₀₋₆alkyl)(aryl)
 20 substituents;

A is -C₀₋₄alkyl, -C₀₋₂alkyl-SO-C₀₋₂alkyl-, -C₀₋₂alkyl-SO₂-C₀₋₂alkyl-, -C₀₋₂alkyl-CO-C₀₋₂alkyl-, -C₀₋₂alkyl-NR⁹CO-C₀₋₂alkyl-, -C₀₋₂alkyl-NR⁹SO₂-C₀₋₂alkyl- or -heteroC₀₋₄alkyl;

W is -C₃₋₇cycloalkyl, -heteroC₃₋₇cycloalkyl, -C₀₋₆alkylaryl, or -C₀₋₆alkylheteroaryl optionally substituted with 1-7 independent halogen, -CN, NO₂, -C₁₋₆alkyl,
 25 -C₁₋₆alkenyl, -C₁₋₆alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -SO₂R⁴, -SO₂NR¹R²,
 30 -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R² substituents;

Y is optionally substituted with 1-7 independent halogen, -CN, NO₂, -C₁₋₆alkyl,
 35 -C₁₋₆alkenyl, -C₁₋₆alkynyl, -OR⁵, -NR⁵R⁶, -C(=NR⁵)NR⁶R⁷, -N(=NR⁵)NR⁶R⁷, -NR⁵COR⁶, -NR⁵CO₂R⁶, -NR⁵SO₂R⁸, -NR⁵CONR⁶R⁷, -SR⁸, -SOR⁸, -SO₂R⁸, -SO₂NR⁵R⁶, -COR⁵,
 -CO₂R⁵, -CONR⁵R⁶, -C(=NR⁵)R⁶, or -C(=NOR⁵)R⁶ substituents, wherein optionally two substituents are combined to form a cycloalkyl or heterocycloalkyl ring fused to Y; wherein the -C₁₋₆alkyl substituent, cycloalkyl ring, or heterocycloalkyl ring each optionally is further
 substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl),

$-O(aryl)$, $-O(heteroaryl)$, $-N(C_0\text{-}6alkyl)(C_0\text{-}6alkyl)$, $-N(C_0\text{-}6alkyl)(C_3\text{-}7cycloalkyl)$, or $-N(C_0\text{-}6alkyl)(aryl)$ groups;

R⁵, R⁶, and R⁷ each independently is $-C_0\text{-}6alkyl$, $-C_3\text{-}7cycloalkyl$, heteroaryl or aryl; any of which is optionally substituted with 1-5 independent halogen, $-CN$, $-C_1\text{-}6alkyl$, $-O(C_0\text{-}6alkyl)$, $-O(C_3\text{-}7cycloalkyl)$, $-O(aryl)$, $-O(heteroaryl)$, $-N(C_0\text{-}6alkyl)(C_0\text{-}6alkyl)$, $-N(C_0\text{-}6alkyl)(C_3\text{-}7cycloalkyl)$, $-N(C_0\text{-}6alkyl)(aryl)$ substituents;

R⁸ is $-C_1\text{-}6alkyl$, $-C_3\text{-}7cycloalkyl$, heteroaryl or aryl; optionally substituted with 1-5 independent halogen, $-CN$, $-C_1\text{-}6alkyl$, $-O(C_0\text{-}6alkyl)$, $-O(C_3\text{-}7cycloalkyl)$, $-O(aryl)$, $-O(heteroaryl)$, $-N(C_0\text{-}6alkyl)(C_0\text{-}6alkyl)$, $-N(C_0\text{-}6alkyl)(C_3\text{-}7cycloalkyl)$, $-N(C_0\text{-}6alkyl)(aryl)$ substituents;

B is $-C_0\text{-}4alkyl$, $-C_0\text{-}2alkyl-SO-C_0\text{-}2alkyl-$, $-C_0\text{-}2alkyl-SO_2-C_0\text{-}2alkyl-$, $-C_0\text{-}2alkyl-CO-C_0\text{-}2alkyl-$, $-C_0\text{-}2alkyl-NR^{10}CO-C_0\text{-}2alkyl-$, $-C_0\text{-}2alkyl-NR^{10}SO_2-C_0\text{-}2alkyl-$ or $-heteroC_0\text{-}4alkyl$;

R⁹ and R¹⁰ each independently is $-C_0\text{-}6alkyl$, $-C_3\text{-}7cycloalkyl$, heteroaryl or aryl; any of which is optionally substituted with 1-5 independent halogen, $-CN$, $-C_1\text{-}6alkyl$, $-O(C_0\text{-}6alkyl)$, $-O(C_3\text{-}7cycloalkyl)$, $-O(aryl)$, $-O(heteroaryl)$, $-N(C_0\text{-}6alkyl)(C_0\text{-}6alkyl)$, $-N(C_0\text{-}6alkyl)(C_3\text{-}7cycloalkyl)$, $-N(C_0\text{-}6alkyl)(aryl)$ substituents;

one of A¹ and A² is N, the other is CR¹²;

R¹¹ and R¹² is each independently halogen, $-C_0\text{-}6alkyl$, $-C_0\text{-}6alkoxyl$, or $-N(C_0\text{-}4alkyl)(C_0\text{-}4alkyl)$, wherein optionally R¹¹ and R¹² are combined to form a cycloalkyl, heterocycloalkyl, aryl or heteroaryl ring fused to the pyrazole 4-ring pyrazolemoiety; wherein the $-C_1\text{-}6alkyl$ substituent, cycloalkyl ring, or heterocycloalkyl ring each optionally is further substituted with 1-5 independent halogen, $-CN$, $-C_1\text{-}6alkyl$, $-O(C_0\text{-}6alkyl)$, $-O(C_3\text{-}7cycloalkyl)$, $-O(aryl)$, $-O(heteroaryl)$, $-N(C_0\text{-}6alkyl)(C_0\text{-}6alkyl)$, $-N(C_0\text{-}6alkyl)(C_3\text{-}7cycloalkyl)$, or $-N(C_0\text{-}6alkyl)(aryl)$ groups; and wherein optionally R¹¹ and R¹² each independently forms $=O$, $=N(C_0\text{-}4alkyl)$ using a bond from the adjoining double bond;

wherein any of the alkyl optionally is substituted with 1-9 independent halogens; Z is $-C_3\text{-}7cycloalkyl$, $-heteroC_3\text{-}7cycloalkyl$, $-C_0\text{-}6alkylaryl$, or $-C_0\text{-}6alkylheteroaryl$ optionally substituted with 1-7 independent halogen, $-CN$, NO_2 , $-C_1\text{-}6alkyl$, $-C_1\text{-}6alkenyl$, $-C_1\text{-}6alkynyl$, $-OR^1$, $-NR^1R^2$, $-C(=NR^1)NR^2R^3$, $-N(=NR^1)NR^2R^3$, $-NR^1COR^2$, $-NR^1CO_2R^2$, $-NR^1SO_2R^4$, $-NR^1CONR^2R^3$, $-SR^4$, $-SOR^4$, $-SO_2R^4$, $-SO_2NR^1R^2$, $-COR^1$, $-CO_2R^1$, $-CONR^1R^2$, $-C(=NR^1)R^2$, or $-C(=NOR^1)R^2$ substituents;

one of W and Z is optionally absent; and

any N may be an N-oxide.

In one aspect, the compounds of this invention are represented by Formula (I) or a pharmaceutically acceptable salt thereof, wherein:

X is 2-pyridyl optionally substituted with 1-4 independent halogen, -CN, NO₂, -C₁₋₆alkyl, -C₁₋₆alkenyl, -C₁₋₆alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -SO₂R⁴, -SO₂NR¹R², -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R² substituents, wherein optionally two substituents are combined to form a cycloalkyl or heterocycloalkyl ring fused to X; wherein the -C₁₋₆alkyl substituent, cycloalkyl ring, or heterocycloalkyl ring each optionally is further substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), or -N(C₀₋₆alkyl)(aryl) groups;

R¹, R², and R³ each independently is -C₀₋₆alkyl, -C₃₋₇cycloalkyl, heteroaryl or aryl; any of which is optionally substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), -N(C₀₋₆alkyl)(aryl) substituents;

R⁴ is -C₁₋₆alkyl, -C₃₋₇cycloalkyl, heteroaryl or aryl; optionally substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), -N(C₀₋₆alkyl)(aryl) substituents;

A is -C₀₋₄alkyl, -C₀₋₂alkyl-SO-C₀₋₂alkyl-, -C₀₋₂alkyl-SO₂-C₀₋₂alkyl-, -C₀₋₂alkyl-CO-C₀₋₂alkyl-, -C₀₋₂alkyl-NR⁹CO-C₀₋₂alkyl-, -C₀₋₂alkyl-NR⁹SO₂-C₀₋₂alkyl- or -heteroC₀₋₄alkyl;

W is -C₃₋₇cycloalkyl, -heteroC₃₋₇cycloalkyl, -C₀₋₆alkylaryl, or -C₀₋₆alkylheteroaryl optionally substituted with 1-7 independent halogen, -CN, NO₂, -C₁₋₆alkyl, -C₁₋₆alkenyl, -C₁₋₆alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -SO₂R⁴, -SO₂NR¹R², -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R² substituents;

Y is aryl or heteroaryl optionally substituted with 1-7 independent halogen, -CN, NO₂, -C₁₋₆alkyl, -C₁₋₆alkenyl, -C₁₋₆alkynyl, -OR⁵, -NR⁵R⁶, -C(=NR⁵)NR⁶R⁷, -N(=NR⁵)NR⁶R⁷, -NR⁵COR⁶, -NR⁵CO₂R⁶, -NR⁵SO₂R⁸, -NR⁵CONR⁶R⁷, -SR⁸, -SOR⁸, -SO₂R⁸, -SO₂NR⁵R⁶, -COR⁵, -CO₂R⁵, -CONR⁵R⁶, -C(=NR⁵)R⁶, or -C(=NOR⁵)R⁶ substituents, wherein optionally two substituents are combined to form a cycloalkyl or heterocycloalkyl ring fused to Y; wherein the -C₁₋₆alkyl substituent, cycloalkyl ring, or heterocycloalkyl ring each optionally is further substituted with 1-5 independent halogen, -CN, -

C₁-6alkyl, -O(C₀-6alkyl), -O(C₃-7cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀-6alkyl)(C₀-6alkyl), -N(C₀-6alkyl)(C₃-7cycloalkyl), or -N(C₀-6alkyl)(aryl) groups;

R⁵, R⁶, and R⁷ each independently is -C₀-6alkyl, -C₃-7cycloalkyl, heteroaryl or aryl; any of which is optionally substituted with 1-5 independent halogen, -CN, -C₁-6alkyl, -O(C₀-6alkyl), -O(C₃-7cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀-6alkyl)(C₀-6alkyl), -N(C₀-6alkyl)(C₃-7cycloalkyl), -N(C₀-6alkyl)(aryl) substituents;

R⁸ is -C₁-6alkyl, -C₃-7cycloalkyl, heteroaryl or aryl; optionally substituted with 1-5 independent halogen, -CN, -C₁-6alkyl, -O(C₀-6alkyl), -O(C₃-7cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀-6alkyl)(C₀-6alkyl), -N(C₀-6alkyl)(C₃-7cycloalkyl), -N(C₀-6alkyl)(aryl) substituents;

B is -C₀-4alkyl, -C₀-2alkyl-SO-C₀-2alkyl-, -C₀-2alkyl-SO₂-C₀-2alkyl-, -C₀-2alkyl-CO-C₀-2alkyl-, -C₀-2alkyl-NR¹⁰CO-C₀-2alkyl-, -C₀-2alkyl-NR¹⁰SO₂-C₀-2alkyl- or -heteroC₀-4alkyl;

R⁹ and R¹⁰ each independently is -C₀-6alkyl, -C₃-7cycloalkyl, heteroaryl or aryl; any of which is optionally substituted with 1-5 independent halogen, -CN, -C₁-6alkyl, -O(C₀-6alkyl), -O(C₃-7cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀-6alkyl)(C₀-6alkyl), -N(C₀-6alkyl)(C₃-7cycloalkyl), -N(C₀-6alkyl)(aryl) substituents;

one of A¹ and A² is N, the other is CR¹²;

R¹¹ and R¹² is each independently halogen, -C₀-6alkyl, -C₀-6alkoxyl, or -N(C₀-4alkyl)(C₀-4alkyl), wherein optionally R¹¹ and R¹² are combined to form a cycloalkyl, heterocycloalkyl, aryl or heteroaryl ring fused to the pyrazole 4-ring pyrazolemoiety; wherein the -C₁-6alkyl substituent, cycloalkyl ring, or heterocycloalkyl ring each optionally is further substituted with 1-5 independent halogen, -CN, -C₁-6alkyl, -O(C₀-6alkyl), -O(C₃-7cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀-6alkyl)(C₀-6alkyl), -N(C₀-6alkyl)(C₃-7cycloalkyl), or -N(C₀-6alkyl)(aryl) groups; and wherein optionally R¹¹ and R¹² each independently forms =O, =N(C₀-4alkyl) using a bond from the adjoining double bond;

wherein any of the alkyl optionally is substituted with 1-9 independent halogens; Z is -C₃-7cycloalkyl, -heteroC₃-7cycloalkyl, -C₀-6alkylaryl, or -C₀-

6alkylheteroaryl optionally substituted with 1-7 independent halogen, -CN, NO₂, -C₁-6alkyl, -C₁-6alkenyl, -C₁-6alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -SO₂R⁴, -SO₂NR¹R², -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R² substituents;

one of W and Z is optionally absent; and

any N may be an N-oxide.

In an embodiment of this one aspect, the compounds of this invention are represented by Formula (I) or a pharmaceutically acceptable salt thereof, wherein

X is 2-pyridyl optionally substituted with 1-4 independent halogen, -CN, NO₂, -C₁₋₆alkyl, -C₁₋₆alkenyl, -C₁₋₆alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -SO₂R⁴, -SO₂NR¹R², -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R² substituents, wherein optionally two substituents are combined to form a cycloalkyl or heterocycloalkyl ring fused to X; wherein the -C₁₋₆alkyl substituent, cycloalkyl ring, or heterocycloalkyl ring each optionally is further substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), or -N(C₀₋₆alkyl)(aryl) groups;

R¹, R², and R³ each independently is -C₀₋₆alkyl, -C₃₋₇cycloalkyl, heteroaryl or aryl; any of which is optionally substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), -N(C₀₋₆alkyl)(aryl) substituents;

R⁴ is -C₁₋₆alkyl, -C₃₋₇cycloalkyl, heteroaryl or aryl; optionally substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), -N(C₀₋₆alkyl)(aryl) substituents;

A is -C₀₋₄alkyl, -C₀₋₂alkyl-SO-C₀₋₂alkyl-, -C₀₋₂alkyl-SO₂-C₀₋₂alkyl-, -C₀₋₂alkyl-CO-C₀₋₂alkyl-, -C₀₋₂alkyl-NR⁹CO-C₀₋₂alkyl-, -C₀₋₂alkyl-NR⁹SO₂-C₀₋₂alkyl- or -heteroC₀₋₄alkyl;

W is -C₃₋₇cycloalkyl, -heteroC₃₋₇cycloalkyl, -C₀₋₆alkylaryl, or -C₀₋₆alkylheteroaryl optionally substituted with 1-7 independent halogen, -CN, NO₂, -C₁₋₆alkyl, -C₁₋₆alkenyl, -C₁₋₆alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -SO₂R⁴, -SO₂NR¹R², -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R² substituents;

Y is phenyl optionally substituted with 1-5 independent halogen, -CN, NO₂, -C₁₋₆alkyl, -C₁₋₆alkenyl, -C₁₋₆alkynyl, -OR⁵, -NR⁵R⁶, -C(=NR⁵)NR⁶R⁷, -N(=NR⁵)NR⁶R⁷, -NR⁵COR⁶, -NR⁵CO₂R⁶, -NR⁵SO₂R⁸, -NR⁵CONR⁶R⁷, -SR⁸, -SOR⁸, -SO₂R⁸, -SO₂NR⁵R⁶, -COR⁵, -CO₂R⁵, -CONR⁵R⁶, -C(=NR⁵)R⁶, or -C(=NOR⁵)R⁶ substituents, wherein optionally two substituents are combined to form a cycloalkyl or heterocycloalkyl ring fused to Y; wherein the -C₁₋₆alkyl substituent, cycloalkyl ring, or heterocycloalkyl ring each optionally is further substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl),

–O(aryl), –O(heteroaryl), –N(C₀-6alkyl)(C₀-6alkyl), -N(C₀-6alkyl)(C₃-7cycloalkyl), or –N(C₀-6alkyl)(aryl) groups;

R⁵, R⁶, and R⁷ each independently is –C₀-6alkyl, –C₃-7cycloalkyl, heteroaryl or aryl; any of which is optionally substituted with 1-5 independent halogen, –CN, –C₁-6alkyl, –O(C₀-6alkyl), –O(C₃-7cycloalkyl), –O(aryl), –O(heteroaryl), –N(C₀-6alkyl)(C₀-6alkyl), -N(C₀-6alkyl)(C₃-7cycloalkyl), –N(C₀-6alkyl)(aryl) substituents;

R⁸ is –C₁-6alkyl, –C₃-7cycloalkyl, heteroaryl or aryl; optionally substituted with 1-5 independent halogen, –CN, –C₁-6alkyl, –O(C₀-6alkyl), –O(C₃-7cycloalkyl), –O(aryl), –O(heteroaryl), –N(C₀-6alkyl)(C₀-6alkyl), –N(C₀-6alkyl)(C₃-7cycloalkyl), –N(C₀-6alkyl)(aryl) substituents;

B is –C₀-4alkyl, –C₀-2alkyl–SO–C₀-2alkyl–, –C₀-2alkyl–SO₂–C₀-2alkyl–, –C₀-2alkyl–CO–C₀-2alkyl–, –C₀-2alkyl–NR¹⁰CO–C₀-2alkyl–, –C₀-2alkyl–NR¹⁰SO₂–C₀-2alkyl– or –heteroC₀-4alkyl;

R⁹ and R¹⁰ each independently is –C₀-6alkyl, –C₃-7cycloalkyl, heteroaryl or aryl; any of which is optionally substituted with 1-5 independent halogen, –CN, –C₁-6alkyl, –O(C₀-6alkyl), –O(C₃-7cycloalkyl), –O(aryl), –O(heteroaryl), –N(C₀-6alkyl)(C₀-6alkyl), -N(C₀-6alkyl)(C₃-7cycloalkyl), –N(C₀-6alkyl)(aryl) substituents;

one of A¹ and A² is N, the other is CR¹²;

R¹¹ and R¹² is each independently halogen, –C₀-6alkyl, –C₀-6alkoxyl, or –N(C₀-4alkyl)(C₀-4alkyl), wherein optionally R¹¹ and R¹² are combined to form a cycloalkyl, heterocycloalkyl, aryl or heteroaryl ring fused to the pyrazole 4-ring pyrazolemoiety; wherein the –C₁-6alkyl substituent, cycloalkyl ring, or heterocycloalkyl ring each optionally is further substituted with 1-5 independent halogen, –CN, –C₁-6alkyl, –O(C₀-6alkyl), –O(C₃-7cycloalkyl), –O(aryl), –O(heteroaryl), –N(C₀-6alkyl)(C₀-6alkyl), -N(C₀-6alkyl)(C₃-7cycloalkyl), or –N(C₀-6alkyl)(aryl) groups; and wherein optionally R¹¹ and R¹² each independently forms =O, =N(C₀-4alkyl) using a bond from the adjoining double bond;

wherein any of the alkyl optionally is substituted with 1-9 independent halogens; Z is –C₃-7cycloalkyl, –heteroC₃-7cycloalkyl, –C₀-6alkylaryl, or –C₀-

6alkylheteroaryl optionally substituted with 1-7 independent halogen, –CN, NO₂, -C₁-6alkyl, -C₁-6alkenyl, -C₁-6alkynyl, –OR¹, –NR¹R², –C(=NR¹)NR²R³, –N(=NR¹)NR²R³, –NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, –SR⁴, -SOR⁴, –SO₂R⁴, –SO₂NR¹R², -COR¹, -CO₂R¹, –CONR¹R², -C(=NR¹)R², or –C(=NOR¹)R² substituents;

one of W and Z is optionally absent; and

any N may be an N-oxide.

In a second aspect, the compounds of this invention are represented by Formula (I) or a pharmaceutically acceptable salt thereof, wherein:

X is aryl or heteroaryl optionally substituted with 1-7 independent halogen, -CN, NO₂, -C₁₋₆alkyl, -C₁₋₆alkenyl, -C₁₋₆alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -SO₂R⁴, -SO₂NR¹R², -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R² substituents, wherein optionally two substituents are combined to form a cycloalkyl or heterocycloalkyl ring fused to X; wherein the -C₁₋₆alkyl substituent, cycloalkyl ring, or heterocycloalkyl ring each optionally is further substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), or -N(C₀₋₆alkyl)(aryl) groups;

R¹, R², and R³ each independently is -C₀₋₆alkyl, -C₃₋₇cycloalkyl, heteroaryl or aryl; any of which is optionally substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), -N(C₀₋₆alkyl)(aryl) substituents;

R⁴ is -C₁₋₆alkyl, -C₃₋₇cycloalkyl, heteroaryl or aryl; optionally substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), -N(C₀₋₆alkyl)(aryl) substituents;

A is -C₀₋₄alkyl, -C₀₋₂alkyl-SO-C₀₋₂alkyl-, -C₀₋₂alkyl-SO₂-C₀₋₂alkyl-, -C₀₋₂alkyl-CO-C₀₋₂alkyl-, -C₀₋₂alkyl-NR⁹CO-C₀₋₂alkyl-, -C₀₋₂alkyl-NR⁹SO₂-C₀₋₂alkyl- or -heteroC₀₋₄alkyl;

W is -C₃₋₇cycloalkyl, -heteroC₃₋₇cycloalkyl, -C₀₋₆alkylaryl, or -C₀₋₆alkylheteroaryl optionally substituted with 1-7 independent halogen, -CN, NO₂, -C₁₋₆alkyl, -C₁₋₆alkenyl, -C₁₋₆alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -SO₂R⁴, -SO₂NR¹R², -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R² substituents;

Y is 2-pyridyl optionally substituted with 1-4 independent halogen, -CN, NO₂, -C₁₋₆alkyl, -C₁₋₆alkenyl, -C₁₋₆alkynyl, -OR⁵, -NR⁵R⁶, -C(=NR⁵)NR⁶R⁷, -N(=NR⁵)NR⁶R⁷, -NR⁵COR⁶, -NR⁵CO₂R⁶, -NR⁵SO₂R⁸, -NR⁵CONR⁶R⁷, -SR⁸, -SOR⁸, -SO₂R⁸, -SO₂NR⁵R⁶, -COR⁵, -CO₂R⁵, -CONR⁵R⁶, -C(=NR⁵)R⁶, or -C(=NOR⁵)R⁶ substituents, wherein optionally two substituents are combined to form a cycloalkyl or heterocycloalkyl ring fused to Y; wherein the -C₁₋₆alkyl substituent, cycloalkyl ring, or heterocycloalkyl ring each optionally is further substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl),

–O(aryl), –O(heteroaryl), –N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), or –N(C₀₋₆alkyl)(aryl) groups;

R⁵, R⁶, and R⁷ each independently is –C₀₋₆alkyl, –C₃₋₇cycloalkyl, heteroaryl or aryl; any of which is optionally substituted with 1-5 independent halogen, –CN, –C₁₋₆alkyl, –O(C₀₋₆alkyl), –O(C₃₋₇cycloalkyl), –O(aryl), –O(heteroaryl), –N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), –N(C₀₋₆alkyl)(aryl) substituents;

R⁸ is –C₁₋₆alkyl, –C₃₋₇cycloalkyl, heteroaryl or aryl; optionally substituted with 1-5 independent halogen, –CN, –C₁₋₆alkyl, –O(C₀₋₆alkyl), –O(C₃₋₇cycloalkyl), –O(aryl), –O(heteroaryl), –N(C₀₋₆alkyl)(C₀₋₆alkyl), –N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), –N(C₀₋₆alkyl)(aryl) substituents;

B is –C₀₋₄alkyl, –C₀₋₂alkyl–SO–C₀₋₂alkyl–, –C₀₋₂alkyl–SO₂–C₀₋₂alkyl–, –C₀₋₂alkyl–CO–C₀₋₂alkyl–, –C₀₋₂alkyl–NR¹⁰CO–C₀₋₂alkyl–, –C₀₋₂alkyl–NR¹⁰SO₂–C₀₋₂alkyl– or –heteroC₀₋₄alkyl;

R⁹ and R¹⁰ each independently is –C₀₋₆alkyl, –C₃₋₇cycloalkyl, heteroaryl or aryl; any of which is optionally substituted with 1-5 independent halogen, –CN, –C₁₋₆alkyl, –O(C₀₋₆alkyl), –O(C₃₋₇cycloalkyl), –O(aryl), –O(heteroaryl), –N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), –N(C₀₋₆alkyl)(aryl) substituents;

one of A¹ and A² is N, the other is CR¹²;

R¹¹ and R¹² is each independently halogen, –C₀₋₆alkyl, –C₀₋₆alkoxyl, or –N(C₀₋₄alkyl)(C₀₋₄alkyl), wherein optionally R¹¹ and R¹² are combined to form a cycloalkyl, heterocycloalkyl, aryl or heteroaryl ring fused to the pyrazole 4-ring pyrazolemoiety; wherein the –C₁₋₆alkyl substituent, cycloalkyl ring, or heterocycloalkyl ring each optionally is further substituted with 1-5 independent halogen, –CN, –C₁₋₆alkyl, –O(C₀₋₆alkyl), –O(C₃₋₇cycloalkyl), –O(aryl), –O(heteroaryl), –N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), or –N(C₀₋₆alkyl)(aryl) groups; and wherein optionally R¹¹ and R¹² each independently forms =O, =N(C₀₋₄alkyl) using a bond from the adjoining double bond;

wherein any of the alkyl optionally is substituted with 1-9 independent halogens;

Z is –C₃₋₇cycloalkyl, –heteroC₃₋₇cycloalkyl, –C₀₋₆alkylaryl, or –C₀₋₆alkylheteroaryl optionally substituted with 1-7 independent halogen, –CN, NO₂, –C₁₋₆alkyl, –C₁₋₆alkenyl, –C₁₋₆alkynyl, –OR¹, –NR¹R², –C(=NR¹)NR²R³, –N(=NR¹)NR²R³, –NR¹COR², –NR¹CO₂R², –NR¹SO₂R⁴, –NR¹CONR²R³, –SR⁴, –SOR⁴, –SO₂R⁴, –SO₂NR¹R², –COR¹, –CO₂R¹, –CONR¹R², –C(=NR¹)R², or –C(=NOR¹)R² substituents;

one of W and Z is optionally absent; and

any N may be an N-oxide.

In an embodiment of the second aspect, the compounds of this invention are represented by Formula (I) or a pharmaceutically acceptable salt thereof, wherein:

X is phenyl optionally substituted with 1-5 independent halogen, -CN, NO₂, -C₁-6alkyl, -C₁-6alkenyl, -C₁-6alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -SO₂R⁴, -SO₂NR¹R², -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R² substituents, wherein optionally two substituents are combined to form a cycloalkyl or heterocycloalkyl ring fused to X; wherein the -C₁-6alkyl substituent, cycloalkyl ring, or heterocycloalkyl ring each optionally is further substituted with 1-5 independent halogen, -CN, -C₁-6alkyl, -O(C₀-6alkyl), -O(C₃-7cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀-6alkyl)(C₀-6alkyl), -N(C₀-6alkyl)(C₃-7cycloalkyl), or -N(C₀-6alkyl)(aryl) groups;

R¹, R², and R³ each independently is -C₀-6alkyl, -C₃-7cycloalkyl, heteroaryl or aryl; any of which is optionally substituted with 1-5 independent halogen, -CN, -C₁-6alkyl, -O(C₀-6alkyl), -O(C₃-7cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀-6alkyl)(C₀-6alkyl), -N(C₀-6alkyl)(C₃-7cycloalkyl), -N(C₀-6alkyl)(aryl) substituents;

R⁴ is -C₁-6alkyl, -C₃-7cycloalkyl, heteroaryl or aryl; optionally substituted with 1-5 independent halogen, -CN, -C₁-6alkyl, -O(C₀-6alkyl), -O(C₃-7cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀-6alkyl)(C₀-6alkyl), -N(C₀-6alkyl)(C₃-7cycloalkyl), -N(C₀-6alkyl)(aryl) substituents;

A is -C₀-4alkyl, -C₀-2alkyl-SO-C₀-2alkyl-, -C₀-2alkyl-SO₂-C₀-2alkyl-, -C₀-2alkyl-CO-C₀-2alkyl-, -C₀-2alkyl-NR⁹CO-C₀-2alkyl-, -C₀-2alkyl-NR⁹SO₂-C₀-2alkyl- or -heteroC₀-4alkyl;

W is -C₃-7cycloalkyl, -heteroC₃-7cycloalkyl, -C₀-6alkylaryl, or -C₀-6alkylheteroaryl optionally substituted with 1-7 independent halogen, -CN, NO₂, -C₁-6alkyl, -C₁-6alkenyl, -C₁-6alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -SO₂R⁴, -SO₂NR¹R², -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R² substituents;

Y is 2-pyridyl optionally substituted with 1-4 independent halogen, -CN, NO₂, -C₁-6alkyl, -C₁-6alkenyl, -C₁-6alkynyl, -OR⁵, -NR⁵R⁶, -C(=NR⁵)NR⁶R⁷, -N(=NR⁵)NR⁶R⁷, -NR⁵COR⁶, -NR⁵CO₂R⁶, -NR⁵SO₂R⁸, -NR⁵CONR⁶R⁷, -SR⁸, -SOR⁸, -SO₂R⁸, -SO₂NR⁵R⁶, -COR⁵, -CO₂R⁵, -CONR⁵R⁶, -C(=NR⁵)R⁶, or -C(=NOR⁵)R⁶ substituents, wherein optionally two substituents are combined to form a cycloalkyl or heterocycloalkyl ring fused to Y; wherein the -C₁-6alkyl substituent, cycloalkyl ring, or heterocycloalkyl ring each optionally is further substituted with 1-5 independent halogen, -CN, -C₁-6alkyl, -O(C₀-6alkyl), -O(C₃-7cycloalkyl),

–O(aryl), –O(heteroaryl), –N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), or –N(C₀₋₆alkyl)(aryl) groups;

R⁵, R⁶, and R⁷ each independently is –C₀₋₆alkyl, –C₃₋₇cycloalkyl, heteroaryl or aryl; any of which is optionally substituted with 1-5 independent halogen, –CN, –C₁₋₆alkyl, –O(C₀₋₆alkyl), –O(C₃₋₇cycloalkyl), –O(aryl), –O(heteroaryl), –N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), –N(C₀₋₆alkyl)(aryl) substituents;

R⁸ is –C₁₋₆alkyl, –C₃₋₇cycloalkyl, heteroaryl or aryl; optionally substituted with 1-5 independent halogen, –CN, –C₁₋₆alkyl, –O(C₀₋₆alkyl), –O(C₃₋₇cycloalkyl), –O(aryl), –O(heteroaryl), –N(C₀₋₆alkyl)(C₀₋₆alkyl), –N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), –N(C₀₋₆alkyl)(aryl) substituents;

B is –C₀₋₄alkyl, –C₀₋₂alkyl–SO–C₀₋₂alkyl–, –C₀₋₂alkyl–SO₂–C₀₋₂alkyl–, –C₀₋₂alkyl–CO–C₀₋₂alkyl–, –C₀₋₂alkyl–NR¹⁰CO–C₀₋₂alkyl–, –C₀₋₂alkyl–NR¹⁰SO₂–C₀₋₂alkyl– or –heteroC₀₋₄alkyl;

R⁹ and R¹⁰ each independently is –C₀₋₆alkyl, –C₃₋₇cycloalkyl, heteroaryl or aryl; any of which is optionally substituted with 1-5 independent halogen, –CN, –C₁₋₆alkyl, –O(C₀₋₆alkyl), –O(C₃₋₇cycloalkyl), –O(aryl), –O(heteroaryl), –N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), –N(C₀₋₆alkyl)(aryl) substituents;

one of A¹ and A² is N, the other is CR¹²;

R¹¹ and R¹² is each independently halogen, –C₀₋₆alkyl, –C₀₋₆alkoxyl, or –N(C₀₋₄alkyl)(C₀₋₄alkyl), wherein optionally R¹¹ and R¹² are combined to form a cycloalkyl, heterocycloalkyl, aryl or heteroaryl ring fused to the pyrazole 4-ring pyrazolemoiety; wherein the –C₁₋₆alkyl substituent, cycloalkyl ring, or heterocycloalkyl ring each optionally is further substituted with 1-5 independent halogen, –CN, –C₁₋₆alkyl, –O(C₀₋₆alkyl), –O(C₃₋₇cycloalkyl), –O(aryl), –O(heteroaryl), –N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), or –N(C₀₋₆alkyl)(aryl) groups; and wherein optionally R¹¹ and R¹² each independently forms =O, =N(C₀₋₄alkyl) using a bond from the adjoining double bond;

wherein any of the alkyl optionally is substituted with 1-9 independent halogens;

Z is –C₃₋₇cycloalkyl, –heteroC₃₋₇cycloalkyl, –C₀₋₆alkylaryl, or –C₀₋₆alkylheteroaryl optionally substituted with 1-7 independent halogen, –CN, NO₂, –C₁₋₆alkyl, –C₁₋₆alkenyl, –C₁₋₆alkynyl, –OR¹, –NR¹R², –C(=NR¹)NR²R³, –N(=NR¹)NR²R³, –NR¹COR², –NR¹CO₂R², –NR¹SO₂R⁴, –NR¹CONR²R³, –SR⁴, –SOR⁴, –SO₂R⁴, –SO₂NR¹R², –COR¹, –CO₂R¹, –CONR¹R², –C(=NR¹)R², or –C(=NOR¹)R² substituents;

one of W and Z is optionally absent; and

any N may be an N-oxide.

In a third aspect, the compounds of this invention are represented by Formula (I) or a pharmaceutically acceptable salt thereof, wherein:

X is phenyl optionally substituted with 1-5 independent halogen, -CN, NO₂, -C₁-6alkyl, -C₁-6alkenyl, -C₁-6alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -SO₂R⁴, -SO₂NR¹R², -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R² substituents, wherein optionally two substituents are combined to form a cycloalkyl or heterocycloalkyl ring fused to X; wherein the -C₁-6alkyl substituent, cycloalkyl ring, or heterocycloalkyl ring each optionally is further substituted with 1-5 independent halogen, -CN, -C₁-6alkyl, -O(C₀-6alkyl), -O(C₃-7cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀-6alkyl)(C₀-6alkyl), -N(C₀-6alkyl)(C₃-7cycloalkyl), or -N(C₀-6alkyl)(aryl) groups;

R¹, R², and R³ each independently is -C₀-6alkyl, -C₃-7cycloalkyl, heteroaryl or aryl; any of which is optionally substituted with 1-5 independent halogen, -CN, -C₁-6alkyl, -O(C₀-6alkyl), -O(C₃-7cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀-6alkyl)(C₀-6alkyl), -N(C₀-6alkyl)(C₃-7cycloalkyl), -N(C₀-6alkyl)(aryl) substituents;

R⁴ is -C₁-6alkyl, -C₃-7cycloalkyl, heteroaryl or aryl; optionally substituted with 1-5 independent halogen, -CN, -C₁-6alkyl, -O(C₀-6alkyl), -O(C₃-7cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀-6alkyl)(C₀-6alkyl), -N(C₀-6alkyl)(C₃-7cycloalkyl), -N(C₀-6alkyl)(aryl) substituents;

A is -C₀-4alkyl, -C₀-2alkyl-SO-C₀-2alkyl-, -C₀-2alkyl-SO₂-C₀-2alkyl-, -C₀-2alkyl-CO-C₀-2alkyl-, -C₀-2alkyl-NR⁹CO-C₀-2alkyl-, -C₀-2alkyl-NR⁹SO₂-C₀-2alkyl- or -heteroC₀-4alkyl;

W is -C₃-7cycloalkyl, -heteroC₃-7cycloalkyl, -C₀-6alkylaryl, or -C₀-6alkylheteroaryl optionally substituted with 1-7 independent halogen, -CN, NO₂, -C₁-6alkyl, -C₁-6alkenyl, -C₁-6alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -SO₂R⁴, -SO₂NR¹R², -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R² substituents;

Y is aryl or heteroaryl optionally substituted with 1-7 independent halogen, -CN, NO₂, -C₁-6alkyl, -C₁-6alkenyl, -C₁-6alkynyl, -OR⁵, -NR⁵R⁶, -C(=NR⁵)NR⁶R⁷, -N(=NR⁵)NR⁶R⁷, -NR⁵COR⁶, -NR⁵CO₂R⁶, -NR⁵SO₂R⁸, -NR⁵CONR⁶R⁷, -SR⁸, -SOR⁸, -SO₂R⁸, -SO₂NR⁵R⁶, -COR⁵, -CO₂R⁵, -CONR⁵R⁶, -C(=NR⁵)R⁶, or -C(=NOR⁵)R⁶ substituents, wherein optionally two substituents are combined to form a cycloalkyl or heterocycloalkyl ring fused to Y; wherein the -C₁-6alkyl substituent, cycloalkyl ring, or heterocycloalkyl ring each optionally is further substituted with 1-5 independent halogen, -CN, -

C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), or -N(C₀₋₆alkyl)(aryl) groups;

R⁵, R⁶, and R⁷ each independently is -C₀₋₆alkyl, -C₃₋₇cycloalkyl, heteroaryl or aryl; any of which is optionally substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), -N(C₀₋₆alkyl)(aryl) substituents;

R⁸ is -C₁₋₆alkyl, -C₃₋₇cycloalkyl, heteroaryl or aryl; optionally substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), -N(C₀₋₆alkyl)(aryl) substituents;

B is -C₀₋₄alkyl, -C₀₋₂alkyl-SO-C₀₋₂alkyl-, -C₀₋₂alkyl-SO₂-C₀₋₂alkyl-, -C₀₋₂alkyl-CO-C₀₋₂alkyl-, -C₀₋₂alkyl-NR¹⁰CO-C₀₋₂alkyl-, -C₀₋₂alkyl-NR¹⁰SO₂-C₀₋₂alkyl- or -heteroC₀₋₄alkyl;

R⁹ and R¹⁰ each independently is -C₀₋₆alkyl, -C₃₋₇cycloalkyl, heteroaryl or aryl; any of which is optionally substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), -N(C₀₋₆alkyl)(aryl) substituents;

one of A¹ and A² is N, the other is CR¹²;

R¹¹ and R¹² is each independently halogen, -C₀₋₆alkyl, -C₀₋₆alkoxyl, or -N(C₀₋₄alkyl)(C₀₋₄alkyl), wherein optionally R¹¹ and R¹² are combined to form a cycloalkyl, heterocycloalkyl, aryl or heteroaryl ring fused to the pyrazole 4-ring pyrazolemoiety; wherein the -C₁₋₆alkyl substituent, cycloalkyl ring, or heterocycloalkyl ring each optionally is further substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), or -N(C₀₋₆alkyl)(aryl) groups; and wherein optionally R¹¹ and R¹² each independently forms =O, =N(C₀₋₄alkyl) using a bond from the adjoining double bond;

wherein any of the alkyl optionally is substituted with 1-9 independent halogens;

Z is -C₃₋₇cycloalkyl, -heteroC₃₋₇cycloalkyl, -C₀₋₆alkylaryl, or -C₀₋₆alkylheteroaryl optionally substituted with 1-7 independent halogen, -CN, NO₂, -C₁₋₆alkyl, -C₁₋₆alkenyl, -C₁₋₆alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -SO₂R⁴, -SO₂NR¹R², -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R² substituents;

one of W and Z is optionally absent; and

any N may be an N-oxide.

In a fourth aspect, the compounds of this invention are represented by Formula (I) or a pharmaceutically acceptable salt thereof, wherein:

X is aryl or heteroaryl optionally substituted with 1-7 independent halogen, -CN, NO₂, -C₁₋₆alkyl, -C₁₋₆alkenyl, -C₁₋₆alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -

5 N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -
SO₂R⁴, -SO₂NR¹R², -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R²
substituents, wherein optionally two substituents are combined to form a cycloalkyl or
heterocycloalkyl ring fused to X; wherein the -C₁₋₆alkyl substituent, cycloalkyl ring, or
heterocycloalkyl ring each optionally is further substituted with 1-5 independent halogen, -CN, -
10 C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), or -N(C₀₋₆alkyl)(aryl) groups;

15 R¹, R², and R³ each independently is -C₀₋₆alkyl, -C₃₋₇cycloalkyl, heteroaryl or
aryl; any of which is optionally substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -
O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), -N(C₀₋₆alkyl)(aryl)
substituents;

20 R⁴ is -C₁₋₆alkyl, -C₃₋₇cycloalkyl, heteroaryl or aryl; optionally substituted with
1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -
O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), -N(C₀₋₆alkyl)(aryl)
substituents;

25 A is -C₀₋₄alkyl, -C₀₋₂alkyl-SO-C₀₋₂alkyl-, -C₀₋₂alkyl-SO₂-C₀₋₂alkyl-, -C₀₋₂alkyl-CO-C₀₋₂alkyl-, -C₀₋₂alkyl-NR⁹CO-C₀₋₂alkyl-, -C₀₋₂alkyl-NR⁹SO₂-C₀₋₂alkyl- or -
heteroC₀₋₄alkyl;

30 W is -C₃₋₇cycloalkyl, -heteroC₃₋₇cycloalkyl, -C₀₋₆alkylaryl, or -C₀₋₆alkylheteroaryl optionally substituted with 1-7 independent halogen, -CN, NO₂, -C₁₋₆alkyl,
-C₁₋₆alkenyl, -C₁₋₆alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -N(=NR¹)NR²R³, -
NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -SO₂R⁴, -SO₂NR¹R²,
-COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R² substituents;

Y is phenyl optionally substituted with 1-5 independent halogen, -CN, NO₂, -C₁₋₆alkyl, -C₁₋₆alkenyl, -C₁₋₆alkynyl, -OR⁵, -NR⁵R⁶, -C(=NR⁵)NR⁶R⁷, -N(=NR⁵)NR⁶R⁷, -
35 NR⁵COR⁶, -NR⁵CO₂R⁶, -NR⁵SO₂R⁸, -NR⁵CONR⁶R⁷, -SR⁸, -SOR⁸, -SO₂R⁸, -SO₂NR⁵R⁶,
-COR⁵, -CO₂R⁵, -CONR⁵R⁶, -C(=NR⁵)R⁶, or -C(=NOR⁵)R⁶ substituents, wherein optionally
two substituents are combined to form a cycloalkyl or heterocycloalkyl ring fused to Y; wherein
the -C₁₋₆alkyl substituent, cycloalkyl ring, or heterocycloalkyl ring each optionally is further
substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl),

$-O(aryl)$, $-O(heteroaryl)$, $-N(C_0\text{-}6alkyl)(C_0\text{-}6alkyl)$, $-N(C_0\text{-}6alkyl)(C_3\text{-}7cycloalkyl)$, or $-N(C_0\text{-}6alkyl)(aryl)$ groups;

R⁵, R⁶, and R⁷ each independently is $-C_0\text{-}6alkyl$, $-C_3\text{-}7cycloalkyl$, heteroaryl or aryl; any of which is optionally substituted with 1-5 independent halogen, $-CN$, $-C_1\text{-}6alkyl$, $-O(C_0\text{-}6alkyl)$, $-O(C_3\text{-}7cycloalkyl)$, $-O(aryl)$, $-O(heteroaryl)$, $-N(C_0\text{-}6alkyl)(C_0\text{-}6alkyl)$, $-N(C_0\text{-}6alkyl)(C_3\text{-}7cycloalkyl)$, $-N(C_0\text{-}6alkyl)(aryl)$ substituents;

R⁸ is $-C_1\text{-}6alkyl$, $-C_3\text{-}7cycloalkyl$, heteroaryl or aryl; optionally substituted with 1-5 independent halogen, $-CN$, $-C_1\text{-}6alkyl$, $-O(C_0\text{-}6alkyl)$, $-O(C_3\text{-}7cycloalkyl)$, $-O(aryl)$, $-O(heteroaryl)$, $-N(C_0\text{-}6alkyl)(C_0\text{-}6alkyl)$, $-N(C_0\text{-}6alkyl)(C_3\text{-}7cycloalkyl)$, $-N(C_0\text{-}6alkyl)(aryl)$ substituents;

B is $-C_0\text{-}4alkyl$, $-C_0\text{-}2alkyl-SO-C_0\text{-}2alkyl-$, $-C_0\text{-}2alkyl-SO_2-C_0\text{-}2alkyl-$, $-C_0\text{-}2alkyl-CO-C_0\text{-}2alkyl-$, $-C_0\text{-}2alkyl-NR^{10}CO-C_0\text{-}2alkyl-$, $-C_0\text{-}2alkyl-NR^{10}SO_2-C_0\text{-}2alkyl-$ or $-heteroC_0\text{-}4alkyl$;

R⁹ and R¹⁰ each independently is $-C_0\text{-}6alkyl$, $-C_3\text{-}7cycloalkyl$, heteroaryl or aryl; any of which is optionally substituted with 1-5 independent halogen, $-CN$, $-C_1\text{-}6alkyl$, $-O(C_0\text{-}6alkyl)$, $-O(C_3\text{-}7cycloalkyl)$, $-O(aryl)$, $-O(heteroaryl)$, $-N(C_0\text{-}6alkyl)(C_0\text{-}6alkyl)$, $-N(C_0\text{-}6alkyl)(C_3\text{-}7cycloalkyl)$, $-N(C_0\text{-}6alkyl)(aryl)$ substituents; one of A¹ and A² is N, the other is CR¹²;

R¹¹ and R¹² is each independently halogen, $-C_0\text{-}6alkyl$, $-C_0\text{-}6alkoxyl$, or $-N(C_0\text{-}4alkyl)(C_0\text{-}4alkyl)$, wherein optionally R¹¹ and R¹² are combined to form a cycloalkyl, heterocycloalkyl, aryl or heteroaryl ring fused to the pyrazole 4-ring pyrazolemoiety; wherein the $-C_1\text{-}6alkyl$ substituent, cycloalkyl ring, or heterocycloalkyl ring each optionally is further substituted with 1-5 independent halogen, $-CN$, $-C_1\text{-}6alkyl$, $-O(C_0\text{-}6alkyl)$, $-O(C_3\text{-}7cycloalkyl)$, $-O(aryl)$, $-O(heteroaryl)$, $-N(C_0\text{-}6alkyl)(C_0\text{-}6alkyl)$, $-N(C_0\text{-}6alkyl)(C_3\text{-}7cycloalkyl)$, or $-N(C_0\text{-}6alkyl)(aryl)$ groups; and wherein optionally R¹¹ and R¹² each independently forms $=O$, $=N(C_0\text{-}4alkyl)$ using a bond from the adjoining double bond;

wherein any of the alkyl optionally is substituted with 1-9 independent halogens;

Z is $-C_3\text{-}7cycloalkyl$, $-heteroC_3\text{-}7cycloalkyl$, $-C_0\text{-}6alkylaryl$, or $-C_0\text{-}6alkylheteroaryl$ optionally substituted with 1-7 independent halogen, $-CN$, NO_2 , $-C_1\text{-}6alkyl$, $-C_1\text{-}6alkenyl$, $-C_1\text{-}6alkynyl$, $-OR^1$, $-NR^1R^2$, $-C(=NR^1)NR^2R^3$, $-N(=NR^1)NR^2R^3$, $-NR^1COR^2$, $-NR^1CO_2R^2$, $-NR^1SO_2R^4$, $-NR^1CONR^2R^3$, $-SR^4$, $-SOR^4$, $-SO_2R^4$, $-SO_2NR^1R^2$, $-COR^1$, $-CO_2R^1$, $-CONR^1R^2$, $-C(=NR^1)R^2$, or $-C(=NOR^1)R^2$ substituents;

one of W and Z is optionally absent; and

any N may be an N-oxide.

In a fifth aspect, the compounds of this invention are represented by Formula (I) or a pharmaceutically acceptable salt thereof, wherein:

X is aryl or heteroaryl optionally substituted with 1-7 independent halogen, -CN, NO₂, -C₁₋₆alkyl, -C₁₋₆alkenyl, -C₁₋₆alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -SO₂R⁴, -SO₂NR¹R², -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R² substituents, wherein optionally two substituents are combined to form a cycloalkyl or heterocycloalkyl ring fused to X; wherein the -C₁₋₆alkyl substituent, cycloalkyl ring, or heterocycloalkyl ring each optionally is further substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), or -N(C₀₋₆alkyl)(aryl) groups

R¹, R², and R³ each independently is -C₀₋₆alkyl, -C₃₋₇cycloalkyl, heteroaryl or aryl; any of which is optionally substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), -N(C₀₋₆alkyl)(aryl) substituents;

R⁴ is -C₁₋₆alkyl, -C₃₋₇cycloalkyl, heteroaryl or aryl; optionally substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), -N(C₀₋₆alkyl)(aryl) substituents;

A is -C₀₋₄alkyl, -C₀₋₂alkyl-SO-C₀₋₂alkyl-, -C₀₋₂alkyl-SO₂-C₀₋₂alkyl-, -C₀₋₂alkyl-CO-C₀₋₂alkyl-, -C₀₋₂alkyl-NR⁹CO-C₀₋₂alkyl-, -C₀₋₂alkyl-NR⁹SO₂-C₀₋₂alkyl- or -heteroC₀₋₄alkyl;

W is -C₃₋₇cycloalkyl, -heteroC₃₋₇cycloalkyl, -C₀₋₆alkylaryl, or -C₀₋₆alkylheteroaryl optionally substituted with 1-7 independent halogen, -CN, NO₂, -C₁₋₆alkyl, -C₁₋₆alkenyl, -C₁₋₆alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -SO₂R⁴, -SO₂NR¹R², -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R² substituents;

Y is quinolinyl optionally substituted with 1-6 independent halogen, -CN, NO₂, -C₁₋₆alkyl, -C₁₋₆alkenyl, -C₁₋₆alkynyl, -OR⁵, -NR⁵R⁶, -C(=NR⁵)NR⁶R⁷, -N(=NR⁵)NR⁶R⁷, -NR⁵COR⁶, -NR⁵CO₂R⁶, -NR⁵SO₂R⁸, -NR⁵CONR⁶R⁷, -SR⁸, -SOR⁸, -SO₂R⁸, -SO₂NR⁵R⁶, -COR⁵, -CO₂R⁵, -CONR⁵R⁶, -C(=NR⁵)R⁶, or -C(=NOR⁵)R⁶ substituents, wherein optionally two substituents are combined to form a cycloalkyl or heterocycloalkyl ring fused to Y; wherein the -C₁₋₆alkyl substituent, cycloalkyl ring, or heterocycloalkyl ring each optionally is further substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl),

$-O(aryl)$, $-O(heteroaryl)$, $-N(C_0\text{-}6alkyl)(C_0\text{-}6alkyl)$, $-N(C_0\text{-}6alkyl)(C_3\text{-}7cycloalkyl)$, or $-N(C_0\text{-}6alkyl)(aryl)$ groups;

R⁵, R⁶, and R⁷ each independently is $-C_0\text{-}6alkyl$, $-C_3\text{-}7cycloalkyl$, heteroaryl or aryl; any of which is optionally substituted with 1-5 independent halogen, $-CN$, $-C_1\text{-}6alkyl$, $-O(C_0\text{-}6alkyl)$, $-O(C_3\text{-}7cycloalkyl)$, $-O(aryl)$, $-O(heteroaryl)$, $-N(C_0\text{-}6alkyl)(C_0\text{-}6alkyl)$, $-N(C_0\text{-}6alkyl)(C_3\text{-}7cycloalkyl)$, $-N(C_0\text{-}6alkyl)(aryl)$ substituents;

5 R⁸ is $-C_1\text{-}6alkyl$, $-C_3\text{-}7cycloalkyl$, heteroaryl or aryl; optionally substituted with 1-5 independent halogen, $-CN$, $-C_1\text{-}6alkyl$, $-O(C_0\text{-}6alkyl)$, $-O(C_3\text{-}7cycloalkyl)$, $-O(aryl)$, $-O(heteroaryl)$, $-N(C_0\text{-}6alkyl)(C_0\text{-}6alkyl)$, $-N(C_0\text{-}6alkyl)(C_3\text{-}7cycloalkyl)$, $-N(C_0\text{-}6alkyl)(aryl)$

10 substituents;

B is $-C_0\text{-}4alkyl$, $-C_0\text{-}2alkyl-SO-C_0\text{-}2alkyl-$, $-C_0\text{-}2alkyl-SO}_2-C_0\text{-}2alkyl-$, $-C_0\text{-}2alkyl-CO-C_0\text{-}2alkyl-$, $-C_0\text{-}2alkyl-NR^{10}CO-C_0\text{-}2alkyl-$, $-C_0\text{-}2alkyl-NR^{10}SO}_2-C_0\text{-}2alkyl-$ or $-heteroC_0\text{-}4alkyl$;

15 R⁹ and R¹⁰ each independently is $-C_0\text{-}6alkyl$, $-C_3\text{-}7cycloalkyl$, heteroaryl or aryl; any of which is optionally substituted with 1-5 independent halogen, $-CN$, $-C_1\text{-}6alkyl$, $-O(C_0\text{-}6alkyl)$, $-O(C_3\text{-}7cycloalkyl)$, $-O(aryl)$, $-O(heteroaryl)$, $-N(C_0\text{-}6alkyl)(C_0\text{-}6alkyl)$, $-N(C_0\text{-}6alkyl)(C_3\text{-}7cycloalkyl)$, $-N(C_0\text{-}6alkyl)(aryl)$ substituents;

one of A¹ and A² is N, the other is CR¹²;

20 R¹¹ and R¹² is each independently halogen, $-C_0\text{-}6alkyl$, $-C_0\text{-}6alkoxyl$, or $-N(C_0\text{-}4alkyl)(C_0\text{-}4alkyl)$, wherein optionally R¹¹ and R¹² are combined to form a cycloalkyl, heterocycloalkyl, aryl or heteroaryl ring fused to the pyrazole 4-ring pyrazolemoiety; wherein the $-C_1\text{-}6alkyl$ substituent, cycloalkyl ring, or heterocycloalkyl ring each optionally is further substituted with 1-5 independent halogen, $-CN$, $-C_1\text{-}6alkyl$, $-O(C_0\text{-}6alkyl)$, $-O(C_3\text{-}7cycloalkyl)$, $-O(aryl)$, $-O(heteroaryl)$, $-N(C_0\text{-}6alkyl)(C_0\text{-}6alkyl)$, $-N(C_0\text{-}6alkyl)(C_3\text{-}7cycloalkyl)$, or $-N(C_0\text{-}6alkyl)(aryl)$ groups; and wherein optionally R¹¹ and R¹² each independently forms $=O$, $=N(C_0\text{-}4alkyl)$ using a bond from the adjoining double bond;

25 wherein any of the alkyl optionally is substituted with 1-9 independent halogens;

Z is $-C_3\text{-}7cycloalkyl$, $-heteroC_3\text{-}7cycloalkyl$, $-C_0\text{-}6alkylaryl$, or $-C_0\text{-}6alkylheteroaryl$ optionally substituted with 1-7 independent halogen, $-CN$, NO_2 , $-C_1\text{-}6alkyl$, $-C_1\text{-}6alkenyl$, $-C_1\text{-}6alkynyl$, $-OR^1$, $-NR^1R^2$, $-C(=NR^1)NR^2R^3$, $-N(=NR^1)NR^2R^3$, $-NR^1COR^2$, $-NR^1CO_2R^2$, $-NR^1SO_2R^4$, $-NR^1CONR^2R^3$, $-SR^4$, $-SOR^4$, $-SO_2R^4$, $-SO_2NR^1R^2$, $-COR^1$, $-CO_2R^1$, $-CONR^1R^2$, $-C(=NR^1)R^2$, or $-C(=NOR^1)R^2$ substituents;

30 one of W and Z is optionally absent; and

any N may be an N-oxide.

In a sixth aspect, the compounds of this invention are represented by Formula (I) or a pharmaceutically acceptable salt thereof, wherein:

X is aryl or heteroaryl optionally substituted with 1-7 independent halogen, -CN, NO₂, -C₁₋₆alkyl, -C₁₋₆alkenyl, -C₁₋₆alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -SO₂R⁴, -SO₂NR¹R², -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R²

5 substituents, wherein optionally two substituents are combined to form a cycloalkyl or heterocycloalkyl ring fused to X; wherein the -C₁₋₆alkyl substituent, cycloalkyl ring, or heterocycloalkyl ring each optionally is further substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), or -N(C₀₋₆alkyl)(aryl) groups;

10 R¹, R², and R³ each independently is -C₀₋₆alkyl, -C₃₋₇cycloalkyl, heteroaryl or aryl; any of which is optionally substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), -N(C₀₋₆alkyl)(aryl) substituents;

15 R⁴ is -C₁₋₆alkyl, -C₃₋₇cycloalkyl, heteroaryl or aryl; optionally substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), -N(C₀₋₆alkyl)(aryl) substituents;

20 A is -C₀₋₄alkyl, -C₀₋₂alkyl-SO-C₀₋₂alkyl-, -C₀₋₂alkyl-SO₂-C₀₋₂alkyl-, -C₀₋₂alkyl-CO-C₀₋₂alkyl-, -C₀₋₂alkyl-NR⁹CO-C₀₋₂alkyl-, -C₀₋₂alkyl-NR⁹SO₂-C₀₋₂alkyl- or -heteroC₀₋₄alkyl;

25 W is -C₃₋₇cycloalkyl, -heteroC₃₋₇cycloalkyl, -C₀₋₆alkylaryl, or -C₀₋₆alkylheteroaryl optionally substituted with 1-7 independent halogen, -CN, NO₂, -C₁₋₆alkyl, -C₁₋₆alkenyl, -C₁₋₆alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -SO₂R⁴, -SO₂NR¹R², -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R² substituents;

30 Y is quinoxalinyl optionally substituted with 1-5 independent halogen, -CN, NO₂, -C₁₋₆alkyl, -C₁₋₆alkenyl, -C₁₋₆alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -SO₂R⁴, -SO₂NR¹R², -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R² substituents, wherein optionally two substituents are combined to form a cycloalkyl or heterocycloalkyl ring fused to X; wherein the -C₁₋₆alkyl substituent, cycloalkyl ring, or heterocycloalkyl ring each optionally is further substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl),

—O(aryl), —O(heteroaryl), —N(C₀-6alkyl)(C₀-6alkyl), -N(C₀-6alkyl)(C₃-7cycloalkyl), or —N(C₀-6alkyl)(aryl) groups.

R⁵, R⁶, and R⁷ each independently is —C₀-6alkyl, —C₃-7cycloalkyl, heteroaryl or aryl; any of which is optionally substituted with 1-5 independent halogen, —CN, —C₁-6alkyl, —O(C₀-6alkyl), —O(C₃-7cycloalkyl), —O(aryl), —O(heteroaryl), —N(C₀-6alkyl)(C₀-6alkyl), -N(C₀-6alkyl)(C₃-7cycloalkyl), —N(C₀-6alkyl)(aryl) substituents;

R⁸ is —C₁-6alkyl, —C₃-7cycloalkyl, heteroaryl or aryl; optionally substituted with 1-5 independent halogen, —CN, —C₁-6alkyl, —O(C₀-6alkyl), —O(C₃-7cycloalkyl), —O(aryl), —O(heteroaryl), —N(C₀-6alkyl)(C₀-6alkyl), —N(C₀-6alkyl)(C₃-7cycloalkyl), —N(C₀-6alkyl)(aryl) substituents;

B is —C₀-4alkyl, —C₀-2alkyl—SO—C₀-2alkyl—, —C₀-2alkyl—SO₂—C₀-2alkyl—, —C₀-2alkyl—CO—C₀-2alkyl—, —C₀-2alkyl—NR¹⁰CO—C₀-2alkyl—, —C₀-2alkyl—NR¹⁰SO₂—C₀-2alkyl— or —heteroC₀-4alkyl;

R⁹ and R¹⁰ each independently is —C₀-6alkyl, —C₃-7cycloalkyl, heteroaryl or aryl; any of which is optionally substituted with 1-5 independent halogen, —CN, —C₁-6alkyl, —O(C₀-6alkyl), —O(C₃-7cycloalkyl), —O(aryl), —O(heteroaryl), —N(C₀-6alkyl)(C₀-6alkyl), -N(C₀-6alkyl)(C₃-7cycloalkyl), —N(C₀-6alkyl)(aryl) substituents; one of A¹ and A² is N, the other is CR¹²;

R¹¹ and R¹² is each independently halogen, —C₀-6alkyl, —C₀-6alkoxyl, or —N(C₀-4alkyl)(C₀-4alkyl), wherein optionally R¹¹ and R¹² are combined to form a cycloalkyl, heterocycloalkyl, aryl or heteroaryl ring fused to the pyrazole 4-ring pyrazolemoiety; wherein the —C₁-6alkyl substituent, cycloalkyl ring, or heterocycloalkyl ring each optionally is further substituted with 1-5 independent halogen, —CN, —C₁-6alkyl, —O(C₀-6alkyl), —O(C₃-7cycloalkyl), —O(aryl), —O(heteroaryl), —N(C₀-6alkyl)(C₀-6alkyl), —N(C₀-6alkyl)(C₃-7cycloalkyl), or —N(C₀-6alkyl)(aryl) groups; and wherein optionally R¹¹ and R¹² each independently forms =O, =N(C₀-4alkyl) using a bond from the adjoining double bond;

wherein any of the alkyl optionally is substituted with 1-9 independent halogens; Z is —C₃-7cycloalkyl, —heteroC₃-7cycloalkyl, —C₀-6alkylaryl, or —C₀-

6alkylheteroaryl optionally substituted with 1-7 independent halogen, —CN, NO₂, —C₁-6alkyl, —C₁-6alkenyl, —C₁-6alkynyl, —OR¹, —NR¹R², —C(=NR¹)NR²R³, —N(=NR¹)NR²R³, —NR¹COR², —NR¹CO₂R², —NR¹SO₂R⁴, —NR¹CONR²R³, —SR⁴, —SOR⁴, —SO₂R⁴, —SO₂NR¹R², —COR¹, —CO₂R¹, —CONR¹R², —C(=NR¹)R², or —C(=NOR¹)R² substituents;

one of W and Z is optionally absent; and
any N may be an N-oxide.

In a seventh aspect, the compounds of this invention are represented by Formula

(I) or a pharmaceutically acceptable salt thereof, wherein:

X is aryl or heteroaryl optionally substituted with 1-7 independent halogen, -CN, NO₂, -C₁₋₆alkyl, -C₁₋₆alkenyl, -C₁₋₆alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -SO₂R⁴, -SO₂NR¹R², -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R² substituents, wherein optionally two substituents are combined to form a cycloalkyl or heterocycloalkyl ring fused to X; wherein the -C₁₋₆alkyl substituent, cycloalkyl ring, or

heterocycloalkyl ring each optionally is further substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), or -N(C₀₋₆alkyl)(aryl) groups

R¹, R², and R³ each independently is -C₀₋₆alkyl, -C₃₋₇cycloalkyl, heteroaryl or aryl; any of which is optionally substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), -N(C₀₋₆alkyl)(aryl) substituents;

R⁴ is -C₁₋₆alkyl, -C₃₋₇cycloalkyl, heteroaryl or aryl; optionally substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), -N(C₀₋₆alkyl)(aryl)

substituents;

A is -C₀₋₄alkyl, -C₀₋₂alkyl-SO-C₀₋₂alkyl-, -C₀₋₂alkyl-SO₂-C₀₋₂alkyl-, -C₀₋₂alkyl-CO-C₀₋₂alkyl-, -C₀₋₂alkyl-NR⁹CO-C₀₋₂alkyl-, -C₀₋₂alkyl-NR⁹SO₂-C₀₋₂alkyl- or -heteroC₀₋₄alkyl;

W is -C₃₋₇cycloalkyl, -heteroC₃₋₇cycloalkyl, -C₀₋₆alkylaryl, or -C₀₋₆alkylheteroaryl optionally substituted with 1-7 independent halogen, -CN, NO₂, -C₁₋₆alkyl, -C₁₋₆alkenyl, -C₁₋₆alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -SO₂R⁴, -SO₂NR¹R², -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R² substituents;

Y is pyrimidinyl optionally substituted with 1-3 independent halogen, -CN, NO₂, -C₁₋₆alkyl, -C₁₋₆alkenyl, -C₁₋₆alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -SO₂R⁴, -SO₂NR¹R², -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R² substituents, wherein optionally two substituents are combined to form a cycloalkyl or heterocycloalkyl ring fused to X; wherein the -C₁₋₆alkyl substituent, cycloalkyl ring, or heterocycloalkyl ring each optionally is further substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl),

—O(aryl), —O(heteroaryl), —N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), or —N(C₀₋₆alkyl)(aryl) groups.

R₅, R₆, and R₇ each independently is —C₀₋₆alkyl, —C₃₋₇cycloalkyl, heteroaryl or aryl; any of which is optionally substituted with 1-5 independent halogen, —CN, —C₁₋₆alkyl, —O(C₀₋₆alkyl), —O(C₃₋₇cycloalkyl), —O(aryl), —O(heteroaryl), —N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), —N(C₀₋₆alkyl)(aryl) substituents;

R₈ is —C₁₋₆alkyl, —C₃₋₇cycloalkyl, heteroaryl or aryl; optionally substituted with 1-5 independent halogen, —CN, —C₁₋₆alkyl, —O(C₀₋₆alkyl), —O(C₃₋₇cycloalkyl), —O(aryl), —O(heteroaryl), —N(C₀₋₆alkyl)(C₀₋₆alkyl), —N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), —N(C₀₋₆alkyl)(aryl) substituents;

B is —C₀₋₄alkyl, —C₀₋₂alkyl—SO—C₀₋₂alkyl—, —C₀₋₂alkyl—SO₂—C₀₋₂alkyl—, —C₀₋₂alkyl—CO—C₀₋₂alkyl—, —C₀₋₂alkyl—NR¹⁰CO—C₀₋₂alkyl—, —C₀₋₂alkyl—NR¹⁰SO₂—C₀₋₂alkyl— or —heteroC₀₋₄alkyl;

R₉ and R₁₀ each independently is —C₀₋₆alkyl, —C₃₋₇cycloalkyl, heteroaryl or aryl; any of which is optionally substituted with 1-5 independent halogen, —CN, —C₁₋₆alkyl, —O(C₀₋₆alkyl), —O(C₃₋₇cycloalkyl), —O(aryl), —O(heteroaryl), —N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), —N(C₀₋₆alkyl)(aryl) substituents; one of A¹ and A² is N, the other is CR¹²;

R¹¹ and R¹² is each independently halogen, —C₀₋₆alkyl, —C₀₋₆alkoxyl, or —N(C₀₋₄alkyl)(C₀₋₄alkyl), wherein optionally R¹¹ and R¹² are combined to form a cycloalkyl, heterocycloalkyl, aryl or heteroaryl ring fused to the pyrazole 4-ring pyrazolemoiety; wherein the —C₁₋₆alkyl substituent, cycloalkyl ring, or heterocycloalkyl ring each optionally is further substituted with 1-5 independent halogen, —CN, —C₁₋₆alkyl, —O(C₀₋₆alkyl), —O(C₃₋₇cycloalkyl), —O(aryl), —O(heteroaryl), —N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), or —N(C₀₋₆alkyl)(aryl) groups; and wherein optionally R¹¹ and R¹² each independently forms =O, =N(C₀₋₄alkyl) using a bond from the adjoining double bond;

wherein any of the alkyl optionally is substituted with 1-9 independent halogens; Z is —C₃₋₇cycloalkyl, —heteroC₃₋₇cycloalkyl, —C₀₋₆alkylaryl, or —C₀₋₆alkylheteroaryl optionally substituted with 1-7 independent halogen, —CN, NO₂, —C₁₋₆alkyl,

—C₁₋₆alkenyl, —C₁₋₆alkynyl, —OR¹, —NR¹R², —C(=NR¹)NR²R³, —N(=NR¹)NR²R³, —NR¹COR², —NR¹CO₂R², —NR¹SO₂R⁴, —NR¹CONR²R³, —SR⁴, —SOR⁴, —SO₂R⁴, —SO₂NR¹R², —COR¹, —CO₂R¹, —CONR¹R², —C(=NR¹)R², or —C(=NOR¹)R² substituents;

one of W and Z is optionally absent; and

any N may be an N-oxide.

In an eighth aspect, the compounds of this invention are represented by Formula (I) or a pharmaceutically acceptable salt thereof, wherein:

X is aryl or heteroaryl optionally substituted with 1-7 independent halogen, -CN, NO₂, -C₁₋₆alkyl, -C₁₋₆alkenyl, -C₁₋₆alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -SO₂R⁴, -SO₂NR¹R², -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R² substituents, wherein optionally two substituents are combined to form a cycloalkyl or heterocycloalkyl ring fused to X; wherein the -C₁₋₆alkyl substituent, cycloalkyl ring, or heterocycloalkyl ring each optionally is further substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), or -N(C₀₋₆alkyl)(aryl) groups

R¹, R², and R³ each independently is -C₀₋₆alkyl, -C₃₋₇cycloalkyl, heteroaryl or aryl; any of which is optionally substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), -N(C₀₋₆alkyl)(aryl) substituents;

R⁴ is -C₁₋₆alkyl, -C₃₋₇cycloalkyl, heteroaryl or aryl; optionally substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), -N(C₀₋₆alkyl)(aryl) substituents;

A is -C₀₋₄alkyl, -C₀₋₂alkyl-SO-C₀₋₂alkyl-, -C₀₋₂alkyl-SO₂-C₀₋₂alkyl-, -C₀₋₂alkyl-CO-C₀₋₂alkyl-, -C₀₋₂alkyl-NR⁹CO-C₀₋₂alkyl-, -C₀₋₂alkyl-NR⁹SO₂-C₀₋₂alkyl- or -heteroC₀₋₄alkyl;

W is -C₃₋₇cycloalkyl, -heteroC₃₋₇cycloalkyl, -C₀₋₆alkylaryl, or -C₀₋₆alkylheteroaryl optionally substituted with 1-7 independent halogen, -CN, NO₂, -C₁₋₆alkyl, -C₁₋₆alkenyl, -C₁₋₆alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -SO₂R⁴, -SO₂NR¹R², -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R² substituents;

Y is aryl or heteroaryl optionally substituted with 1-7 independent halogen, -CN, NO₂, -C₁₋₆alkyl, -C₁₋₆alkenyl, -C₁₋₆alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -SO₂R⁴, -SO₂NR¹R², -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R² substituents, wherein optionally two substituents are combined to form a cycloalkyl or heterocycloalkyl ring fused to X; wherein the -C₁₋₆alkyl substituent, cycloalkyl ring, or heterocycloalkyl ring each optionally is further substituted with 1-5 independent halogen, -CN, -

C₁-6alkyl, -O(C₀-6alkyl), -O(C₃-7cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀-6alkyl)(C₀-6alkyl), -N(C₀-6alkyl)(C₃-7cycloalkyl), or -N(C₀-6alkyl)(aryl) groups.

R⁵, R⁶, and R⁷ each independently is -C₀-6alkyl, -C₃-7cycloalkyl, heteroaryl or aryl; any of which is optionally substituted with 1-5 independent halogen, -CN, -C₁-6alkyl, -O(C₀-6alkyl), -O(C₃-7cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀-6alkyl)(C₀-6alkyl), -N(C₀-6alkyl)(C₃-7cycloalkyl), -N(C₀-6alkyl)(aryl) substituents;

R⁸ is -C₁-6alkyl, -C₃-7cycloalkyl, heteroaryl or aryl; optionally substituted with 1-5 independent halogen, -CN, -C₁-6alkyl, -O(C₀-6alkyl), -O(C₃-7cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀-6alkyl)(C₀-6alkyl), -N(C₀-6alkyl)(C₃-7cycloalkyl), -N(C₀-6alkyl)(aryl) substituents;

B is -C₀-4alkyl, -C₀-2alkyl-SO-C₀-2alkyl-, -C₀-2alkyl-SO₂-C₀-2alkyl-, -C₀-2alkyl-CO-C₀-2alkyl-, -C₀-2alkyl-NR¹⁰CO-C₀-2alkyl-, -C₀-2alkyl-NR¹⁰SO₂-C₀-2alkyl- or -heteroC₀-4alkyl;

R⁹ and R¹⁰ each independently is -C₀-6alkyl, -C₃-7cycloalkyl, heteroaryl or aryl; any of which is optionally substituted with 1-5 independent halogen, -CN, -C₁-6alkyl, -O(C₀-6alkyl), -O(C₃-7cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀-6alkyl)(C₀-6alkyl), -N(C₀-6alkyl)(C₃-7cycloalkyl), -N(C₀-6alkyl)(aryl) substituents; one of A¹ and A² is N, the other is CR¹²;

R¹¹ and R¹² is each independently halogen, -C₀-6alkyl, -C₀-6alkoxyl, or -N(C₀-4alkyl)(C₀-4alkyl), wherein optionally R¹¹ and R¹² are combined to form a cycloalkyl, heterocycloalkyl, aryl or heteroaryl ring fused to the pyrazole 4-ring pyrazolemoiety; wherein the -C₁-6alkyl substituent, cycloalkyl ring, or heterocycloalkyl ring each optionally is further substituted with 1-5 independent halogen, -CN, -C₁-6alkyl, -O(C₀-6alkyl), -O(C₃-7cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀-6alkyl)(C₀-6alkyl), -N(C₀-6alkyl)(C₃-7cycloalkyl), or -N(C₀-6alkyl)(aryl) groups; and wherein optionally R¹¹ and R¹² each independently forms =O, =N(C₀-4alkyl) using a bond from the adjoining double bond;

wherein any of the alkyl optionally is substituted with 1-9 independent halogens;
Z is -C₀-6alkylaryl or -C₀-6alkylheteroaryl optionally substituted with 1-7

independent halogen, -CN, NO₂, -C₁-6alkyl, -C₁-6alkenyl, -C₁-6alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -SO₂R⁴, -SO₂NR¹R², -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R² substituents;

one of W and Z is optionally absent; and
any N may be an N-oxide.

In a ninth aspect of the invention, the compounds of this invention are represented by Formula (I) or a pharmaceutically acceptable salt thereof, wherein:

X is aryl or heteroaryl optionally substituted with 1-7 independent halogen, -CN, NO₂, -C₁₋₆alkyl, -C₁₋₆alkenyl, -C₁₋₆alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -SO₂R⁴, -SO₂NR¹R², -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R²

5 substituents, wherein optionally two substituents are combined to form a cycloalkyl or heterocycloalkyl ring fused to X; wherein the -C₁₋₆alkyl substituent, cycloalkyl ring, or
 10 heterocycloalkyl ring each optionally is further substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), or -N(C₀₋₆alkyl)(aryl) groups
 15 R¹, R², and R³ each independently is -C₀₋₆alkyl, -C₃₋₇cycloalkyl, heteroaryl or aryl; any of which is optionally substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), -N(C₀₋₆alkyl)(aryl) substituents;

20 R⁴ is -C₁₋₆alkyl, -C₃₋₇cycloalkyl, heteroaryl or aryl; optionally substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), -N(C₀₋₆alkyl)(aryl) substituents;

25 A is -C₀₋₄alkyl, -C₀₋₂alkyl-SO-C₀₋₂alkyl-, -C₀₋₂alkyl-SO₂-C₀₋₂alkyl-, -C₀₋₂alkyl-CO-C₀₋₂alkyl-, -C₀₋₂alkyl-NR⁹CO-C₀₋₂alkyl-, -C₀₋₂alkyl-NR⁹SO₂-C₀₋₂alkyl- or -heteroC₀₋₄alkyl;

30 W is -C₀₋₆alkylaryl optionally substituted with 1-7 independent halogen, -CN, NO₂, -C₁₋₆alkyl, -C₁₋₆alkenyl, -C₁₋₆alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -SO₂R⁴, -SO₂NR¹R², -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R² substituents;

35 Y is aryl or heteroaryl optionally substituted with 1-7 independent halogen, -CN, NO₂, -C₁₋₆alkyl, -C₁₋₆alkenyl, -C₁₋₆alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -SO₂R⁴, -SO₂NR¹R², -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R² substituents, wherein optionally two substituents are combined to form a cycloalkyl or heterocycloalkyl ring fused to X; wherein the -C₁₋₆alkyl substituent, cycloalkyl ring, or heterocycloalkyl ring each optionally is further substituted with 1-5 independent halogen, -CN, -

C₁-6alkyl, -O(C₀-6alkyl), -O(C₃-7cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀-6alkyl)(C₀-6alkyl), -N(C₀-6alkyl)(C₃-7cycloalkyl), or -N(C₀-6alkyl)(aryl) groups.

R₅, R₆, and R₇ each independently is -C₀-6alkyl, -C₃-7cycloalkyl, heteroaryl or aryl; any of which is optionally substituted with 1-5 independent halogen, -CN, -C₁-6alkyl, -O(C₀-6alkyl), -O(C₃-7cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀-6alkyl)(C₀-6alkyl), -N(C₀-6alkyl)(C₃-7cycloalkyl), -N(C₀-6alkyl)(aryl) substituents;

R₈ is -C₁-6alkyl, -C₃-7cycloalkyl, heteroaryl or aryl; optionally substituted with 1-5 independent halogen, -CN, -C₁-6alkyl, -O(C₀-6alkyl), -O(C₃-7cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀-6alkyl)(C₀-6alkyl), -N(C₀-6alkyl)(C₃-7cycloalkyl), -N(C₀-6alkyl)(aryl) substituents;

B is -C₀-4alkyl, -C₀-2alkyl-SO-C₀-2alkyl-, -C₀-2alkyl-SO₂-C₀-2alkyl-, -C₀-2alkyl-CO-C₀-2alkyl-, -C₀-2alkyl-NR¹⁰CO-C₀-2alkyl-, -C₀-2alkyl-NR¹⁰SO₂-C₀-2alkyl- or -heteroC₀-4alkyl;

R₉ and R₁₀ each independently is -C₀-6alkyl, -C₃-7cycloalkyl, heteroaryl or aryl; any of which is optionally substituted with 1-5 independent halogen, -CN, -C₁-6alkyl, -O(C₀-6alkyl), -O(C₃-7cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀-6alkyl)(C₀-6alkyl), -N(C₀-6alkyl)(C₃-7cycloalkyl), -N(C₀-6alkyl)(aryl) substituents;

one of A₁ and A₂ is N, the other is CR¹²;

R¹¹ and R¹² is each independently halogen, -C₀-6alkyl, -C₀-6alkoxyl, or -N(C₀-4alkyl)(C₀-4alkyl), wherein optionally R¹¹ and R¹² are combined to form a cycloalkyl, heterocycloalkyl, aryl or heteroaryl ring fused to the pyrazole 4-ring pyrazolemoiety; wherein the -C₁-6alkyl substituent, cycloalkyl ring, or heterocycloalkyl ring each optionally is further substituted with 1-5 independent halogen, -CN, -C₁-6alkyl, -O(C₀-6alkyl), -O(C₃-7cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀-6alkyl)(C₀-6alkyl), -N(C₀-6alkyl)(C₃-7cycloalkyl), or -N(C₀-6alkyl)(aryl) groups; and wherein optionally R¹¹ and R¹² each independently forms =O, =N(C₀-4alkyl) using a bond from the adjoining double bond;

wherein any of the alkyl optionally is substituted with 1-9 independent halogens;

Z is -C₃-7cycloalkyl, -heteroC₃-7cycloalkyl, -C₀-6alkylaryl, or -C₀-6alkylheteroaryl optionally substituted with 1-7 independent halogen, -CN, NO₂, -C₁-6alkyl, -C₁-6alkenyl, -C₁-6alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -SO₂R⁴, -SO₂NR¹R², -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R² substituents;

one of W and Z is optionally absent; and

any N may be an N-oxide.

In a tenth aspect, the compounds of this invention are represented by Formula (I) or a pharmaceutically acceptable salt thereof, wherein:

X is aryl or heteroaryl optionally substituted with 1-7 independent halogen, -CN, NO₂, -C₁₋₆alkyl, -C₁₋₆alkenyl, -C₁₋₆alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -SO₂R⁴, -SO₂NR¹R², -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R² substituents, wherein optionally two substituents are combined to form a cycloalkyl or heterocycloalkyl ring fused to X; wherein the -C₁₋₆alkyl substituent, cycloalkyl ring, or heterocycloalkyl ring each optionally is further substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), or -N(C₀₋₆alkyl)(aryl) groups;

5 R¹, R², and R³ each independently is -C₀₋₆alkyl, -C₃₋₇cycloalkyl, heteroaryl or aryl; any of which is optionally substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), -N(C₀₋₆alkyl)(aryl) substituents;

10 R⁴ is -C₁₋₆alkyl, -C₃₋₇cycloalkyl, heteroaryl or aryl; optionally substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), -N(C₀₋₆alkyl)(aryl) substituents;

15 A is -C₀₋₄alkyl, -C₀₋₂alkyl-SO-C₀₋₂alkyl-, -C₀₋₂alkyl-SO₂-C₀₋₂alkyl-, -C₀₋₂alkyl-CO-C₀₋₂alkyl-, -C₀₋₂alkyl-NR⁹CO-C₀₋₂alkyl-, -C₀₋₂alkyl-NR⁹SO₂-C₀₋₂alkyl- or -heteroC₀₋₄alkyl;

20 W is -C₀₋₆alkylheteroaryl optionally substituted with 1-7 independent halogen, -CN, NO₂, -C₁₋₆alkyl, -C₁₋₆alkenyl, -C₁₋₆alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -SO₂R⁴, -SO₂NR¹R², -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R² substituents;

25 Y is aryl or heteroaryl optionally substituted with 1-7 independent halogen, -CN, NO₂, -C₁₋₆alkyl, -C₁₋₆alkenyl, -C₁₋₆alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -SO₂R⁴, -SO₂NR¹R², -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R² substituents, wherein optionally two substituents are combined to form a cycloalkyl or heterocycloalkyl ring fused to X; wherein the -C₁₋₆alkyl substituent, cycloalkyl ring, or heterocycloalkyl ring each optionally is further substituted with 1-5 independent halogen, -CN, -

C₁-6alkyl, -O(C₀-6alkyl), -O(C₃-7cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀-6alkyl)(C₀-6alkyl), -N(C₀-6alkyl)(C₃-7cycloalkyl), or -N(C₀-6alkyl)(aryl) groups.

R⁵, R⁶, and R⁷ each independently is -C₀-6alkyl, -C₃-7cycloalkyl, heteroaryl or aryl; any of which is optionally substituted with 1-5 independent halogen, -CN, -C₁-6alkyl, -O(C₀-6alkyl), -O(C₃-7cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀-6alkyl)(C₀-6alkyl), -N(C₀-6alkyl)(C₃-7cycloalkyl), -N(C₀-6alkyl)(aryl) substituents;

R⁸ is -C₁-6alkyl, -C₃-7cycloalkyl, heteroaryl or aryl; optionally substituted with 1-5 independent halogen, -CN, -C₁-6alkyl, -O(C₀-6alkyl), -O(C₃-7cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀-6alkyl)(C₀-6alkyl), -N(C₀-6alkyl)(C₃-7cycloalkyl), -N(C₀-6alkyl)(aryl) substituents;

B is -C₀-4alkyl, -C₀-2alkyl-SO-C₀-2alkyl-, -C₀-2alkyl-SO₂-C₀-2alkyl-, -C₀-2alkyl-CO-C₀-2alkyl-, -C₀-2alkyl-NR¹⁰CO-C₀-2alkyl-, -C₀-2alkyl-NR¹⁰SO₂-C₀-2alkyl- or -heteroC₀-4alkyl;

R⁹ and R¹⁰ each independently is -C₀-6alkyl, -C₃-7cycloalkyl, heteroaryl or aryl; any of which is optionally substituted with 1-5 independent halogen, -CN, -C₁-6alkyl, -O(C₀-6alkyl), -O(C₃-7cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀-6alkyl)(C₀-6alkyl), -N(C₀-6alkyl)(C₃-7cycloalkyl), -N(C₀-6alkyl)(aryl) substituents; one of A¹ and A² is N, the other is CR¹²;

R¹¹ and R¹² is each independently halogen, -C₀-6alkyl, -C₀-6alkoxyl, or -N(C₀-4alkyl)(C₀-4alkyl), wherein optionally R¹¹ and R¹² are combined to form a cycloalkyl; heterocycloalkyl, aryl or heteroaryl ring fused to the pyrazole 4-ring pyrazolemoiety; wherein the -C₁-6alkyl substituent, cycloalkyl ring, or heterocycloalkyl ring each optionally is further substituted with 1-5 independent halogen, -CN, -C₁-6alkyl, -O(C₀-6alkyl), -O(C₃-7cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀-6alkyl)(C₀-6alkyl), -N(C₀-6alkyl)(C₃-7cycloalkyl), or -N(C₀-6alkyl)(aryl) groups; and wherein optionally R¹¹ and R¹² each independently forms =O, =N(C₀-4alkyl) using a bond from the adjoining double bond;

wherein any of the alkyl optionally is substituted with 1-9 independent halogens; Z is -C₃-7cycloalkyl, -heteroC₃-7cycloalkyl, -C₀-6alkylaryl, or -C₀-6alkylheteroaryl optionally substituted with 1-7 independent halogen, -CN, NO₂, -C₁-6alkyl,

-C₁-6alkenyl, -C₁-6alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -SO₂R⁴, -SO₂NR¹R², -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R² substituents;

one of W and Z is optionally absent; and
any N may be an N-oxide.

In an eleventh aspect, the compounds of this invention are represented by Formula (I) or a pharmaceutically acceptable salt thereof, wherein:

X is aryl or heteroaryl optionally substituted with 1-7 independent halogen, -CN, NO₂, -C₁₋₆alkyl, -C₁₋₆alkenyl, -C₁₋₆alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -

5 N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -
SO₂R⁴, -SO₂NR¹R², -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R²
substituents, wherein optionally two substituents are combined to form a cycloalkyl or
heterocycloalkyl ring fused to X; wherein the -C₁₋₆alkyl substituent, cycloalkyl ring, or
heterocycloalkyl ring each optionally is further substituted with 1-5 independent halogen, -CN, -
10 C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), or -N(C₀₋₆alkyl)(aryl) groups;

15 R¹, R², and R³ each independently is -C₀₋₆alkyl, -C₃₋₇cycloalkyl, heteroaryl or
aryl; any of which is optionally substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -
O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), -N(C₀₋₆alkyl)(aryl) substituents;

20 R⁴ is -C₁₋₆alkyl, -C₃₋₇cycloalkyl, heteroaryl or aryl; optionally substituted with
1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -
O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), -N(C₀₋₆alkyl)(aryl)
substituents;

25 A is -C₀₋₄alkyl, -C₀₋₂alkyl-SO-C₀₋₂alkyl-, -C₀₋₂alkyl-SO₂-C₀₋₂alkyl-, -C₀₋₂alkyl-CO-C₀₋₂alkyl-, -C₀₋₂alkyl-NR⁹CO-C₀₋₂alkyl-, -C₀₋₂alkyl-NR⁹SO₂-C₀₋₂alkyl- or -
heteroC₀₋₄alkyl;

30 W is -C₃₋₇cycloalkyl optionally substituted with 1-7 independent halogen, -CN,
NO₂, -C₁₋₆alkyl, -C₁₋₆alkenyl, -C₁₋₆alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -
-N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -
SO₂R⁴, -SO₂NR¹R², -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R²
substituents;

35 Y is aryl or heteroaryl optionally substituted with 1-7 independent halogen, -CN,
NO₂, -C₁₋₆alkyl, -C₁₋₆alkenyl, -C₁₋₆alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -
-N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -
SO₂R⁴, -SO₂NR¹R², -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R²
substituents, wherein optionally two substituents are combined to form a cycloalkyl or
heterocycloalkyl ring fused to X; wherein the -C₁₋₆alkyl substituent, cycloalkyl ring, or
heterocycloalkyl ring each optionally is further substituted with 1-5 independent halogen, -CN, -

C₁-6alkyl, -O(C₀-6alkyl), -O(C₃-7cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀-6alkyl)(C₀-6alkyl), -N(C₀-6alkyl)(C₃-7cycloalkyl), or -N(C₀-6alkyl)(aryl) groups.

R₅, R₆, and R₇ each independently is -C₀-6alkyl, -C₃-7cycloalkyl, heteroaryl or aryl; any of which is optionally substituted with 1-5 independent halogen, -CN, -C₁-6alkyl, -O(C₀-6alkyl), -O(C₃-7cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀-6alkyl)(C₀-6alkyl), -N(C₀-6alkyl)(C₃-7cycloalkyl), -N(C₀-6alkyl)(aryl) substituents;

R₈ is -C₁-6alkyl, -C₃-7cycloalkyl, heteroaryl or aryl; optionally substituted with 1-5 independent halogen, -CN, -C₁-6alkyl, -O(C₀-6alkyl), -O(C₃-7cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀-6alkyl)(C₀-6alkyl), -N(C₀-6alkyl)(C₃-7cycloalkyl), -N(C₀-6alkyl)(aryl) substituents;

B is -C₀-4alkyl, -C₀-2alkyl-SO-C₀-2alkyl-, -C₀-2alkyl-SO₂-C₀-2alkyl-, -C₀-2alkyl-CO-C₀-2alkyl-, -C₀-2alkyl-NR¹⁰CO-C₀-2alkyl-, -C₀-2alkyl-NR¹⁰SO₂-C₀-2alkyl- or -heteroC₀-4alkyl;

R₉ and R₁₀ each independently is -C₀-6alkyl, -C₃-7cycloalkyl, heteroaryl or aryl; any of which is optionally substituted with 1-5 independent halogen, -CN, -C₁-6alkyl, -O(C₀-6alkyl), -O(C₃-7cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀-6alkyl)(C₀-6alkyl), -N(C₀-6alkyl)(C₃-7cycloalkyl), -N(C₀-6alkyl)(aryl) substituents; one of A¹ and A² is N, the other is CR¹²;

R¹¹ and R¹² is each independently halogen, -C₀-6alkyl, -C₀-6alkoxyl, or -N(C₀-4alkyl)(C₀-4alkyl), wherein optionally R¹¹ and R¹² are combined to form a cycloalkyl, heterocycloalkyl, aryl or heteroaryl ring fused to the pyrazole 4-ring pyrazolemoiety; wherein the -C₁-6alkyl substituent, cycloalkyl ring, or heterocycloalkyl ring each optionally is further substituted with 1-5 independent halogen, -CN, -C₁-6alkyl, -O(C₀-6alkyl), -O(C₃-7cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀-6alkyl)(C₀-6alkyl), -N(C₀-6alkyl)(C₃-7cycloalkyl), or -N(C₀-6alkyl)(aryl) groups; and wherein optionally R¹¹ and R¹² each independently forms =O, =N(C₀-4alkyl) using a bond from the adjoining double bond;

wherein any of the alkyl optionally is substituted with 1-9 independent halogens;

Z is -C₃-7cycloalkyl, -heteroC₃-7cycloalkyl, -C₀-6alkylaryl, or -C₀-6alkylheteroaryl optionally substituted with 1-7 independent halogen, -CN, NO₂, -C₁-6alkyl, -C₁-6alkenyl, -C₁-6alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -SO₂R⁴, -SO₂NR¹R², -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R² substituents;

one of W and Z is optionally absent; and

any N may be an N-oxide.

In twelfth aspect, the compounds of this invention are represented by Formula (I) or a pharmaceutically acceptable salt thereof, wherein:

X is aryl or heteroaryl optionally substituted with 1-7 independent halogen, -CN, NO₂, -C₁₋₆alkyl, -C₁₋₆alkenyl, -C₁₋₆alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -

5 N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -
SO₂R⁴, -SO₂NR¹R², -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R²
substituents, wherein optionally two substituents are combined to form a cycloalkyl or
heterocycloalkyl ring fused to X; wherein the -C₁₋₆alkyl substituent, cycloalkyl ring, or
heterocycloalkyl ring each optionally is further substituted with 1-5 independent halogen, -CN, -
10 C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), or -N(C₀₋₆alkyl)(aryl) groups

15 R¹, R², and R³ each independently is -C₀₋₆alkyl, -C₃₋₇cycloalkyl, heteroaryl or
aryl; any of which is optionally substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -
O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), -N(C₀₋₆alkyl)(aryl) substituents;

20 R⁴ is -C₁₋₆alkyl, -C₃₋₇cycloalkyl, heteroaryl or aryl; optionally substituted with
1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -
O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), -N(C₀₋₆alkyl)(aryl)
substituents;

25 A is -C₀₋₄alkyl, -C₀₋₂alkyl-SO-C₀₋₂alkyl-, -C₀₋₂alkyl-SO₂-C₀₋₂alkyl-, -C₀₋₂alkyl-CO-C₀₋₂alkyl-, -C₀₋₂alkyl-NR⁹CO-C₀₋₂alkyl-, -C₀₋₂alkyl-NR⁹SO₂-C₀₋₂alkyl- or -
heteroC₀₋₄alkyl;

30 W is C₀₋₆ heterocycloalkyl optionally substituted with 1-7 independent halogen,
-CN, NO₂, -C₁₋₆alkyl, -C₁₋₆alkenyl, -C₁₋₆alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -
N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -
SO₂R⁴, -SO₂NR¹R², -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R²
substituents;

35 Y is aryl or heteroaryl optionally substituted with 1-7 independent halogen, -CN,
NO₂, -C₁₋₆alkyl, -C₁₋₆alkenyl, -C₁₋₆alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -
N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -
SO₂R⁴, -SO₂NR¹R², -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R²
substituents, wherein optionally two substituents are combined to form a cycloalkyl or
heterocycloalkyl ring fused to X; wherein the -C₁₋₆alkyl substituent, cycloalkyl ring, or
heterocycloalkyl ring each optionally is further substituted with 1-5 independent halogen, -CN, -

C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), or -N(C₀₋₆alkyl)(aryl) groups.

R⁵, R⁶, and R⁷ each independently is -C₀₋₆alkyl, -C₃₋₇cycloalkyl, heteroaryl or aryl; any of which is optionally substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), -N(C₀₋₆alkyl)(aryl) substituents;

R⁸ is -C₁₋₆alkyl, -C₃₋₇cycloalkyl, heteroaryl or aryl; optionally substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), -N(C₀₋₆alkyl)(aryl) substituents;

B is -C₀₋₄alkyl, -C₀₋₂alkyl-SO-C₀₋₂alkyl-, -C₀₋₂alkyl-SO₂-C₀₋₂alkyl-, -C₀₋₂alkyl-CO-C₀₋₂alkyl-, -C₀₋₂alkyl-NR¹⁰CO-C₀₋₂alkyl-, -C₀₋₂alkyl-NR¹⁰SO₂-C₀₋₂alkyl- or -heteroC₀₋₄alkyl;

R⁹ and R¹⁰ each independently is -C₀₋₆alkyl, -C₃₋₇cycloalkyl, heteroaryl or aryl; any of which is optionally substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), -N(C₀₋₆alkyl)(aryl) substituents; one of A¹ and A² is N, the other is CR¹²;

R¹¹ and R¹² is each independently halogen, -C₀₋₆alkyl, -C₀₋₆alkoxyl, or -N(C₀₋₄alkyl)(C₀₋₄alkyl), wherein optionally R¹¹ and R¹² are combined to form a cycloalkyl, heterocycloalkyl, aryl or heteroaryl ring fused to the pyrazole 4-ring pyrazolemoiety; wherein the -C₁₋₆alkyl substituent, cycloalkyl ring, or heterocycloalkyl ring each optionally is further substituted with 1-5 independent halogen, -CN, -C₁₋₆alkyl, -O(C₀₋₆alkyl), -O(C₃₋₇cycloalkyl), -O(aryl), -O(heteroaryl), -N(C₀₋₆alkyl)(C₀₋₆alkyl), -N(C₀₋₆alkyl)(C₃₋₇cycloalkyl), or -N(C₀₋₆alkyl)(aryl) groups; and wherein optionally R¹¹ and R¹² each independently forms =O, =N(C₀₋₄alkyl) using a bond from the adjoining double bond;

wherein any of the alkyl optionally is substituted with 1-9 independent halogens;

Z is -C₃₋₇cycloalkyl, -heteroC₃₋₇cycloalkyl, -C₀₋₆alkylaryl, or -C₀₋₆alkylheteroaryl optionally substituted with 1-7 independent halogen, -CN, NO₂, -C₁₋₆alkyl,

-C₁₋₆alkenyl, -C₁₋₆alkynyl, -OR¹, -NR¹R², -C(=NR¹)NR²R³, -N(=NR¹)NR²R³, -NR¹COR², -NR¹CO₂R², -NR¹SO₂R⁴, -NR¹CONR²R³, -SR⁴, -SOR⁴, -SO₂R⁴, -SO₂NR¹R², -COR¹, -CO₂R¹, -CONR¹R², -C(=NR¹)R², or -C(=NOR¹)R² substituents;

one of W and Z is optionally absent; and

any N may be an N-oxide.

As used herein, "alkyl" as well as other groups having the prefix "alk" such as, for example, alkoxy, alkanoyl, alkenyl, alkynyl and the like, means carbon chains which may be linear or branched or combinations thereof. Examples of alkyl groups include methyl, ethyl, propyl, isopropyl, butyl, sec- and tert-butyl, pentyl, hexyl, heptyl and the like. "Alkenyl", 5 "alkynyl" and other like terms include carbon chains containing at least one unsaturated C-C bond.

The term "cycloalkyl" means carbocycles containing no heteroatoms, and includes mono-, bi- and tricyclic saturated carbocycles, as well as fused ring systems. Such fused ring systems can include one ring that is partially or fully unsaturated such as a benzene ring to form 10 fused ring systems such as benzofused carbocycles. Cycloalkyl includes such fused ring systems as spirofused ring systems. Examples of cycloalkyl include cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, decahydronaphthalene, adamantane, indanyl, indenyl, fluorenyl, 1,2,3,4-tetrahydronaphthalene and the like. Similarly, "cycloalkenyl" means carbocycles containing no 15 heteroatoms and at least one non-aromatic C-C double bond, and include mono-, bi- and tricyclic partially saturated carbocycles, as well as benzofused cycloalkenes. Examples of cycloalkenyl include cyclohexenyl, indenyl, and the like.

The term "aryl" means an aromatic substituent which is a single ring or multiple rings fused together. When formed of multiple rings, at least one of the constituent rings is aromatic. The preferred aryl substituents are phenyl and naphthyl groups.

20 The term "cycloalkyloxy" unless specifically stated otherwise includes a cycloalkyl group connected by a short C₁-2alkyl length to the oxy connecting atom.

The term "C₀₋₆alkyl" includes alkyls containing 6, 5, 4, 3, 2, 1, or no carbon atoms. An alkyl with no carbon atoms is a hydrogen atom substituent when the alkyl is a terminal group and is a direct bond when the alkyl is a bridging group.

25 The term "hetero" unless specifically stated otherwise includes one or more O, S, or N atoms. For example, heterocycloalkyl and heteroaryl include ring systems that contain one or more O, S, or N atoms in the ring, including mixtures of such atoms. The hetero atoms replace ring carbon atoms. Thus, for example, a heterocycloC₅alkyl is a five-member ring containing from 4 to no carbon atoms. Examples of heteroaryls include pyridinyl, quinolinyl, isoquinolinyl, pyridazinyl, pyrimidinyl, pyrazinyl, quinoxalinyl, furyl, benzofuryl, dibenzofuryl, thienyl, benzthienyl, pyrrolyl, indolyl, pyrazolyl, indazolyl, oxazolyl, benzoxazolyl, isoxazolyl, thiazolyl, benzothiazolyl, isothiazolyl, imidazolyl, benzimidazolyl, oxadiazolyl, thiadiazolyl, triazolyl, and tetrazolyl. Examples of heterocycloalkyls include azetidinyl, pyrrolidinyl, piperidinyl, piperazinyl, morpholinyl, tetrahydrofuranyl, imidazolinyl, pyrrolidin-2-one, piperidin-35 2-one, and thiomorpholinyl.

The term "heteroC₀₋₄alkyl" means a heteroalkyl containing 3, 2, 1, or no carbon atoms. However, at least one heteroatom must be present. Thus, as an example, a heteroC₀₋₄alkyl having no carbon atoms but one N atom would be a -NH- if a bridging group and a -NH₂ if a terminal group. Analogous bridging or terminal groups are clear for an O or S heteroatom.

5 The term "amine" unless specifically stated otherwise includes primary, secondary and tertiary amines substituted with C₀₋₆alkyl.

The term "carbonyl" unless specifically stated otherwise includes a C₀₋₆alkyl substituent group when the carbonyl is terminal.

The term "halogen" includes fluorine, chlorine, bromine and iodine atoms.

10 The term "optionally substituted" is intended to include both substituted and unsubstituted. Thus, for example, optionally substituted aryl could represent a pentafluorophenyl or a phenyl ring. Further, optionally substituted multiple moieties such as, for example, alkylaryl are intended to mean that the aryl and the aryl groups are optionally substituted. If only one of the multiple moieties is optionally substituted then it will be specifically recited such as "an 15 alkylaryl, the aryl optionally substituted with halogen or hydroxyl."

Compounds described herein contain one or more double bonds and may thus give rise to cis/trans isomers as well as other conformational isomers. The present invention includes all such possible isomers as well as mixtures of such isomers.

20 Compounds described herein can contain one or more asymmetric centers and may thus give rise to diastereomers and optical isomers. The present invention includes all such possible diastereomers as well as their racemic mixtures, their substantially pure resolved enantiomers, all possible geometric isomers, and pharmaceutically acceptable salts thereof. The above Formula I is shown without a definitive stereochemistry at certain positions. The present invention includes all stereoisomers of Formula I and pharmaceutically acceptable salts thereof. 25 Further, mixtures of stereoisomers as well as isolated specific stereoisomers are also included. During the course of the synthetic procedures used to prepare such compounds, or in using racemization or epimerization procedures known to those skilled in the art, the products of such procedures can be a mixture of stereoisomers.

30 The term "pharmaceutically acceptable salts" refers to salts prepared from pharmaceutically acceptable non-toxic bases or acids. When the compound of the present invention is acidic, its corresponding salt can be conveniently prepared from pharmaceutically acceptable non-toxic bases, including inorganic bases and organic bases. Salts derived from such inorganic bases include aluminum, ammonium, calcium, copper (ic and ous), ferric, ferrous, lithium, magnesium, manganese (ic and ous), potassium, sodium, zinc and the like salts. 35 Particularly preferred are the ammonium, calcium, magnesium, potassium and sodium salts.

Salts derived from pharmaceutically acceptable organic non-toxic bases include salts of primary, secondary, and tertiary amines, as well as cyclic amines and substituted amines such as naturally occurring and synthesized substituted amines. Other pharmaceutically acceptable organic non-toxic bases from which salts can be formed include ion exchange resins such as, for example,

5 arginine, betaine, caffeine, choline, N,N'-dibenzylethylenediamine, diethylamine, 2-diethylaminoethanol, 2-dimethylaminoethanol, ethanolamine, ethylenediamine, N-ethylmorpholine, N-ethylpiperidine, glucamine, glucosamine, histidine, hydrabamine, isopropylamine, lysine, methylglucamine, morpholine, piperazine, piperidine, polyamine resins, procaine, purines, theobromine, triethylamine, trimethylamine, tripropylamine, tromethamine
10 and the like.

When the compound of the present invention is basic, its corresponding salt can be conveniently prepared from pharmaceutically acceptable non-toxic acids, including inorganic and organic acids. Such acids include, for example, acetic, benzenesulfonic, benzoic, camphorsulfonic, citric, ethanesulfonic, fumaric, gluconic, glutamic, hydrobromic, hydrochloric, 15 isethionic, lactic, maleic, malic, mandelic, methanesulfonic, mucic, nitric, pamoic, pantothenic, phosphoric, succinic, sulfuric, tartaric, p-toluenesulfonic acid and the like. Particularly preferred are citric, hydrobromic, hydrochloric, maleic, phosphoric, sulfuric, and tartaric acids.

The pharmaceutical compositions of the present invention comprise a compound represented by Formula I (or pharmaceutically acceptable salts thereof) as an active ingredient, a 20 pharmaceutically acceptable carrier and optionally other therapeutic ingredients or adjuvants. Such additional therapeutic ingredients include, for example, i) opiate agonists or antagonists, ii) calcium channel antagonists, iii) 5HT receptor agonists or antagonists iv) sodium channel antagonists, v) NMDA receptor agonists or antagonists, vi) COX-2 selective inhibitors, vii) NK1 antagonists, viii) non-steroidal anti-inflammatory drugs ("NSAID"), ix) GABA-A receptor modulators, x) dopamine agonists or antagonists, xi) selective serotonin reuptake inhibitors ("SSRI") and/or selective serotonin and norepinephrine reuptake inhibitors ("SSNRI"), xii) tricyclic antidepressant drugs, xiv) norepinephrine modulators, xv) L-DOPA, xvi) buspirone, xvii) lithium, xviii) valproate, ix) neurontin (gabapentin), xx) olanzapine, xxi) nicotinic agonists or antagonists including nicotine, xxii) muscarinic agonists or antagonists, xxiii) heroin substituting drugs such as methadone, levo-alpha-acetylmethadol, buprenorphine and naltrexone, and xxiv) disulfiram and acamprosate. The compositions include compositions suitable for oral, rectal, topical, and parenteral (including subcutaneous, intramuscular, and intravenous) administration, although the most suitable route in any given case will depend on the particular host, and nature and severity of the conditions for which the active ingredient is being

administered. The pharmaceutical compositions may be conveniently presented in unit dosage form and prepared by any of the methods well known in the art of pharmacy.

Creams, ointments, jellies, solutions, or suspensions containing the compound of Formula I can be employed for topical use. Mouth washes and gargles are included within the 5 scope of topical use for the purposes of this invention.

Dosage levels from about 0.01mg/kg to about 140mg/kg of body weight per day are useful in the treatment of psychiatric and mood disorders such as, for example, schizophrenia, anxiety, depression, panic, bipolar disorder, and circadian rhythm and sleep 10 disorders – such as shift-work induced sleep disorder or jet-lag, as well as being useful in the treatment of pain which are responsive to mGluR5 inhibition, or alternatively about 0.5mg to about 7g per patient per day. For example, schizophrenia, anxiety, depression, panic, bipolar disorder, and circadian rhythm and sleep disorders – such as shift-work induced sleep disorder or 15 jet-lag, may be effectively treated by the administration of from about 0.01mg to 75mg of the compound per kilogram of body weight per day, or alternatively about 0.5mg to about 3.5g per patient per day. Pain may be effectively treated by the administration of from about 0.01mg to 125mg of the compound per kilogram of body weight per day, or alternatively about 0.5mg to about 5.5g per patient per day. Further, it is understood that the mGluR5 inhibiting compounds 20 of this invention can be administered at prophylactically effective dosage levels to prevent the above-recited conditions.

The amount of active ingredient that may be combined with the carrier materials to produce a single dosage form will vary depending upon the host treated and the particular mode of administration. For example, a formulation intended for the oral administration to humans may conveniently contain from about 0.5mg to about 5g of active agent, compounded with an appropriate and convenient amount of carrier material which may vary from about 5 to 25 about 95 percent of the total composition. Unit dosage forms will generally contain between from about 1mg to about 1000mg of the active ingredient, typically 25mg, 50mg, 100mg, 200mg, 300mg, 400mg, 500mg, 600mg, 800mg or 1000mg.

It is understood, however, that the specific dose level for any particular patient will depend upon a variety of factors including the age, body weight, general health, sex, diet, 30 time of administration, route of administration, rate of excretion, drug combination and the severity of the particular disease undergoing therapy.

In practice, the compounds represented by Formula I, or pharmaceutically acceptable salts thereof, of this invention can be combined as the active ingredient in intimate admixture with a pharmaceutical carrier according to conventional pharmaceutical compounding 35 techniques. The carrier may take a wide variety of forms depending on the form of preparation

desired for administration, e.g., oral or parenteral (including intravenous). Thus, the pharmaceutical compositions of the present invention can be presented as discrete units suitable for oral administration such as capsules, cachets or tablets each containing a predetermined amount of the active ingredient. Further, the compositions can be presented as a powder, as 5 granules, as a solution, as a suspension in an aqueous liquid, as a non-aqueous liquid, as an oil-in-water emulsion or as a water-in-oil liquid emulsion. In addition to the common dosage forms set out above, the compound represented by Formula I, or pharmaceutically acceptable salts thereof, may also be administered by controlled release means and/or delivery devices. The 10 compositions may be prepared by any of the methods of pharmacy. In general, such methods include a step of bringing into association the active ingredient with the carrier that constitutes one or more necessary ingredients. In general, the compositions are prepared by uniformly and intimately admixing the active ingredient with liquid carriers or finely divided solid carriers or both. The product can then be conveniently shaped into the desired presentation.

Thus, the pharmaceutical compositions of this invention may include a 15 pharmaceutically acceptable carrier and a compound or a pharmaceutically acceptable salt of Formula I. The compounds of Formula I, or pharmaceutically acceptable salts thereof, can also be included in pharmaceutical compositions in combination with one or more other therapeutically active compounds.

The pharmaceutical carrier employed can be, for example, a solid, liquid, or gas. 20 Examples of solid carriers include lactose, terra alba, sucrose, talc, gelatin, agar, pectin, acacia, magnesium stearate, and stearic acid. Examples of liquid carriers are sugar syrup, peanut oil, olive oil, and water. Examples of gaseous carriers include carbon dioxide and nitrogen.

In preparing the compositions for oral dosage form, any convenient 25 pharmaceutical media may be employed. For example, water, glycols, oils, alcohols, flavoring agents, preservatives, coloring agents and the like may be used to form oral liquid preparations such as suspensions, elixirs and solutions; while carriers such as starches, sugars, microcrystalline cellulose, diluents, granulating agents, lubricants, binders, disintegrating agents, and the like may be used to form oral solid preparations such as powders, capsules and tablets. Because of their ease of administration, tablets and capsules are the preferred oral dosage units 30 whereby solid pharmaceutical carriers are employed. Optionally, tablets may be coated by standard aqueous or nonaqueous techniques

A tablet containing the composition of this invention may be prepared by compression or molding, optionally with one or more accessory ingredients or adjuvants. Compressed tablets may be prepared by compressing, in a suitable machine, the active ingredient 35 in a free-flowing form such as powder or granules, optionally mixed with a binder, lubricant,

inert diluent, surface active or dispersing agent. Molded tablets may be made by molding in a suitable machine, a mixture of the powdered compound moistened with an inert liquid diluent. Each tablet preferably contains from about 0.1mg to about 500mg of the active ingredient and each cachet or capsule preferably containing from about 0.1mg to about 500mg of the active ingredient. Thus, a tablet, cachet, or capsule conveniently contains 0.1mg, 1mg, 5mg, 25mg, 50mg, 100mg, 200mg, 300mg, 400mg, or 500mg of the active ingredient taken one or two tablets, cachets, or capsules, once, twice, or three times daily.

Pharmaceutical compositions of the present invention suitable for parenteral administration may be prepared as solutions or suspensions of the active compounds in water. A suitable surfactant can be included such as, for example, hydroxypropylcellulose. Dispersions can also be prepared in glycerol, liquid polyethylene glycols, and mixtures thereof in oils. Further, a preservative can be included to prevent the detrimental growth of microorganisms.

Pharmaceutical compositions of the present invention suitable for injectable use include sterile aqueous solutions or dispersions. Furthermore, the compositions can be in the form of sterile powders for the extemporaneous preparation of such sterile injectable solutions or dispersions. In all cases, the final injectable form must be sterile and must be effectively fluid for easy syringability. The pharmaceutical compositions must be stable under the conditions of manufacture and storage; thus, preferably should be preserved against the contaminating action of microorganisms such as bacteria and fungi. The carrier can be a solvent or dispersion medium containing, for example, water, ethanol, polyol (e.g. glycerol, propylene glycol and liquid polyethylene glycol), vegetable oils, and suitable mixtures thereof.

Pharmaceutical compositions of the present invention can be in a form suitable for topical use such as, for example, an aerosol, cream, ointment, lotion, dusting powder, or the like. Further, the compositions can be in a form suitable for use in transdermal devices. These formulations may be prepared, utilizing a compound represented by Formula I of this invention, or pharmaceutically acceptable salts thereof, via conventional processing methods. As an example, a cream or ointment is prepared by mixing hydrophilic material and water, together with about 5 wt% to about 10 wt% of the compound, to produce a cream or ointment having a desired consistency.

Pharmaceutical compositions of this invention can be in a form suitable for rectal administration wherein the carrier is a solid. It is preferable that the mixture forms unit dose suppositories. Suitable carriers include cocoa butter and other materials commonly used in the art. The suppositories may be conveniently formed by first admixing the composition with the softened or melted carrier(s) followed by chilling and shaping in moulds.

In addition to the aforementioned carrier ingredients, the pharmaceutical formulations described above may include, as appropriate, one or more additional carrier ingredients such as diluents, buffers, flavoring agents, binders, surface-active agents, thickeners, lubricants, preservatives (including anti-oxidants) and the like. Furthermore, other adjuvants can 5 be included to render the formulation isotonic with the blood of the intended recipient. Compositions containing a compound described by Formula I, or pharmaceutically acceptable salts thereof, may also be prepared in powder or liquid concentrate form.

The compounds and pharmaceutical compositions of this invention have been found to exhibit biological activity as mGluR5 inhibitors. Accordingly, another aspect of the 10 invention is the treatment in mammals of, for example, schizophrenia, anxiety, depression, panic, bipolar disorder, and circadian rhythm and sleep disorders – such as shift-work induced sleep disorder or jet-lag, pain, Parkinson's disease, cognitive dysfunction, epilepsy, drug addiction, drug abuse and drug withdrawal – maladies that are amenable to amelioration through inhibition of mGluR5 – by the administration of an effective amount of the compounds of this invention. 15 The term "mammals" includes humans, as well as other animals such as, for example, dogs, cats, horses, pigs, and cattle. Accordingly, it is understood that the treatment of mammals other than humans is the treatment of clinical correlating afflictions to those above recited examples that are human afflictions.

Further, as described above, the compound of this invention can be utilized in 20 combination with other therapeutic compounds. In particular, the combinations of the mGluR5 inhibiting compound of this invention can be advantageously used in combination with i) opiate agonists or antagonists, ii) calcium channel antagonists, iii) 5HT receptor agonists or antagonists iv) sodium channel antagonists, v) NMDA receptor agonists or antagonists, vi) COX-2 selective inhibitors, vii) NK1 antagonists, viii) non-steroidal anti-inflammatory drugs ("NSAID"), ix) 25 GABA-A receptor modulators, x) dopamine agonists or antagonists, xi) selective serotonin reuptake inhibitors ("SSRI") and/or selective serotonin and norepinephrine reuptake inhibitors ("SSNRI"), xii) tricyclic antidepressant drugs, xiii) norepinephrine modulators, xiv) L-DOPA, xv) buspirone, xvi) lithium, xvii) valproate, xviii) neurontin (gabapentin), xix) olanzapine, xx) 30 nicotinic agonists or antagonists including nicotine, xxi) muscarinic agonists or antagonists, xxii) heroin substituting drugs such as methadone, levo-alpha-acetylmethadol, buprenorphine and naltrexone, and xxiii) disulfiram and acamprosate.

The abbreviations used herein have the following tabulated meanings.

Abbreviations not tabulated below have their meanings as commonly used unless specifically stated otherwise.

Ac	acetyl
AIBN	2,2'-azobis(isobutyronitrile)
BINAP	1,1'-bi-2-naphthol
Bn	benzyl
CAMP	cyclic adenosine-3',5'-monophosphate
DAST	(diethylamino)sulfur trifluoride
DEAD	diethyl azodicarboxylate
DBU	1,8-diazabicyclo[5.4.0]undec-7-ene
DIBAL	diisobutylaluminum hydride
DMAP	4-(dimethylamino)pyridine
DMF	N,N-dimethylformamide
dppf	1,1'-bis(diphenylphosphino)-ferrocene
EDCI	1-(3-dimethylaminopropyl)-3-ethylcarbodiimide hydrochloride
Et ₃ N	triethylamine
GST	glutathione transferase
HMDS	hexamethydisilazide
LDA	lithium diisopropylamide
m-CPBA	metachloroperbenzoic acid
MMPP	monoperoxyphthalic acid
MPPM	monoperoxyphthalic acid, magnesium salt 6H ₂ O
Ms	methanesulfonyl = mesyl = SO ₂ Me
MsO	methanesulfonate = mesylate
NBS	N-bromo succinimide
NSAID	non-steroidal anti-inflammatory drug
o-Tol	ortho-tolyl
OXONE®	2KHSO ₅ •KHSO ₄ •K ₂ SO ₄
PCC	pyridinium chlorochromate
Pd ₂ (dba) ₃	Bis(dibenzylideneacetone) palladium(0)
PDC	pyridinium dichromate
PDE	Phosphodiesterase
Ph	Phenyl
Phe	Benzenediyi
PMB	para-methoxybenzyl

Pye	Pyridinediyl
r.t.	room temperature
Rac.	Racemic
SAM	aminosulfonyl or sulfonamide or SO ₂ NH ₂
SEM	2-(trimethylsilyl)ethoxymethoxy
SPA	scintillation proximity assay
TBAF	tetra-n-butylammonium fluoride
Th	2- or 3-thienyl
TFA	trifluoroacetic acid
TFAA	trifluoroacetic acid anhydride
THF	Tetrahydrofuran
Thi	Thiophenediyl
TLC	thin layer chromatography
TMS-CN	trimethylsilyl cyanide
TMSI	trimethylsilyl iodide
Tz	1H (or 2H)-tetrazol-5-yl
XANTPHOS	4,5-Bis-diphenylphosphanyl-9,9-dimethyl-9H-xanthene
C ₃ H ₅	Allyl

ALKYL GROUP ABBREVIATIONS

Me	=	Methyl
Et	=	ethyl
n-Pr	=	normal propyl
i-Pr	=	isopropyl
n-Bu	=	normal butyl
i-Bu	=	isobutyl
s-Bu	=	secondary butyl
t-Bu	=	tertiary butyl
c-Pr	=	cyclopropyl
c-Bu	=	cyclobutyl
c-Pen	=	cyclopentyl

c-Hex	=	cyclohexyl
-------	---	------------

ASSAYS DEMONSTRATING BIOLOGICAL ACTIVITY

The compounds of this invention were tested against the hmGluR5a receptor
5 stably expressed in mouse fibroblast Ltk⁻ cells (the hmGluR5a/L38-20 cell line) and activity was detected by changes in [Ca⁺⁺]_i, measured using the fluorescent Ca⁺⁺-sensitive dye, fura-2. InsP assays were performed in mouse fibroblast Ltk⁻ cells (LM5a cell line) stably expressing hmGluR5a. The assays described in International Patent Publication WO 0116121 can be used.

10 **Calcium Flux Assay**

The activity of compounds was examined against the hmGluR5a receptor stably expressed in mouse fibroblast Ltk⁻ cells (the hmGluR5a/L38 cell line). See generally Daggett et al., *Neuropharmacology* 34:871-886 (1995). Receptor activity was detected by changes in intracellular calcium ([Ca²⁺]_i) measured using the fluorescent calcium-sensitive dye, fura-2. The hmGluR5a/L38-20 cells were plated onto 96-well plates, and loaded with 3 μM fura-2 for 1h. Unincorporated dye was washed from the cells, and the cell plate was transferred to a 96-channel fluorimeter (SIBIA-SAIC, La Jolla, CA) which is integrated into a fully automated plate handling and liquid delivery system. Cells were excited at 350 and 385nm with a xenon source combined with optical filters. Emitted light was collected from the sample through a dichroic mirror and a 20 510nm interference filter and directed into a cooled CCD camera (Princeton Instruments). Image pairs were captured approximately every 1s, and ratio images were generated after background subtraction. After a basal reading of 20s, an EC₅₀ concentration of glutamate (10μM) was added to the well, and the response evaluated for another 60s. The glutamate-evoked increase in [Ca²⁺]_i in the presence of the screening compound was compared to the response of glutamate alone (the 25 positive control).

Phosphatidylinositol hydrolysis (PI) assays

Inositolphosphate assays were performed as described by Berridge et al. [Berridge et al, *Biochem. J.* 206: 587-5950 (1982); and Nakajima et al., *J. Biol. Chem.* 267:2437-2442 (1992)] with slight modifications. Mouse fibroblast Ltk cells expressing hmGluR5 (hmGluR5/L38- 20 cells) were seeded in 24-well plates at a density of 8x10⁵cells/well. One μCi of [³H]-inositol (Amersham PT6-271; Arlington Heights, Ill.; specific activity = 17.7 Ci/mmol) was added to each well and incubated for 16h at 37°C. Cells were washed twice and incubated for 45min in 0.5mL of standard Hepes buffered saline buffer (HBS; 125mM NaCl, 5mM KCl,

0.62mM MgSO₄, 1.8mM CaCl₂, 20mM HEPES, 6mM glucose, pH to 7.4). The cells were washed with HBS containing 10mM LiCl, and 400µL buffer added to each well. Cells were incubated at 37°C for 20min. For testing, 50µL of 10X compounds used in the practice of the invention (made in HBS/LiCl (100mM)) was added and incubated for 10 minutes. Cells were
5 activated by the addition of 10µM glutamate, and the plates left for 1 hour at 37°C. The incubations were terminated by the addition of 1mL ice-cold methanol to each well. In order to isolate inositol phosphates (IPs), the cells were scraped from wells, and placed in numbered glass test tubes. One mL of chloroform was added to each tube, the tubes were mixed, and the phases separated by centrifugation. IPs were separated on Dowex anion exchange columns (AG 1-X8
10 100-200 mesh formate form). The upper aqueous layer (750µL) was added to the Dowex columns, and the columns eluted with 3mL of distilled water. The eluents were discarded, and the columns were washed with 10mLs of 60mM ammonium formate/5mM Borax, which was also discarded as waste. Finally, the columns were eluted with 4mL of 800mM ammonium formate/0.1M formic acid, and the samples collected in scintillation vials. Scintillant was added
15 to each vial, and the vials shaken, and counted in a scintillation counter after 2 hours.

Phosphatidylinositol hydrolysis in cells treated with certain exemplary compounds was compared to phosphatidylinositol hydrolysis in cells treated with the agonist alone in the absence of compound.

The compounds of this application have mGluR5 inhibitory activity as shown by
20 an IC₅₀ value of less than 10µM and/or inhibition of >50% at a concentration of 100 µM in the PI assay. Preferably, the compounds should have IC₅₀ values of less than 1 µM in the calcium flux assay and IC₅₀ values of less than 10 µM in the PI assay. Even more preferably, the compounds should have IC₅₀ values of less than 100 nM in the calcium flux assay and IC₅₀ values of less than 1 µM in the PI assay.

25 Examples 1-7 have mGluR5 inhibitory activity as shown by an IC₅₀ value of less than 2µM.

Examples 8-33 have mGluR5 inhibitory activity as shown by an IC₅₀ value of greater than 2µM.

30 The examples that follow are intended as an illustration of certain preferred embodiments of the invention and no limitation of the invention is implied.

Unless specifically stated otherwise, the experimental procedures were performed under the following conditions. All operations were carried out at room or ambient temperature - that is, at a temperature in the range of 18-25°C. Evaporation of solvent was carried out using a
35 rotary evaporator under reduced pressure (600-4000pascals: 4.5-30mm. Hg) with a bath

temperature of up to 60°C. The course of reactions was followed by thin layer chromatography (TLC) and reaction times are given for illustration only. Melting points are uncorrected and 'd' indicates decomposition. The melting points given are those obtained for the materials prepared as described. Polymorphism may result in isolation of materials with different melting points in
 5 some preparations. The structure and purity of all final products were assured by at least one of the following techniques: TLC, mass spectrometry, nuclear magnetic resonance (NMR) spectrometry or microanalytical data. When given, yields are for illustration only. When given, NMR data is in the form of delta (δ) values for major diagnostic protons, given in parts per million (ppm) relative to tetramethylsilane (TMS) as internal standard, determined at 300MHz,
 10 400MHz or 500MHz using the indicated solvent. Conventional abbreviations used for signal shape are: s. singlet; d. doublet; t. triplet; m. multiplet; br. broad; etc. In addition, "Ar" signifies an aromatic signal. Chemical symbols have their usual meanings; the following abbreviations are used: v (volume), w (weight), b.p. (boiling point), m.p. (melting point), L (liter(s)), mL (milliliters), g (gram(s)), mg (milligrams(s)), mol (moles), mmol (millimoles), eq (equivalent(s)).
 15

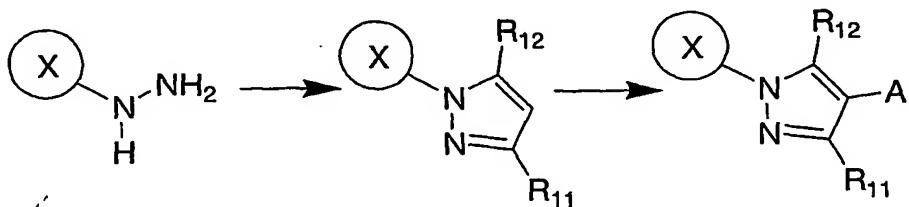
Methods of Synthesis

Compounds of the present invention can be prepared according to the following methods. The substituents are the same as in Formula I except where defined otherwise.

In accordance with another embodiment of the present invention, there are
 20 provided methods for the preparation of heteroaryl-substituted pyrazole 4-ring pyrazolecompounds as described above. For example, many of the heterocyclic compounds described above can be prepared using synthetic chemistry techniques well known in the art (see *Comprehensive Heterocyclic Chemistry*, Katritzky, A. R. and Rees, C. W. eds., Pergamon Press, Oxford, 1984) from a heteoaryl-substituted pyrazole of Formula (I).

In Schemes 1 to 10 below, X and Y are as defined above. Other variables are understood by one in the art by the context in which they are used.
 25

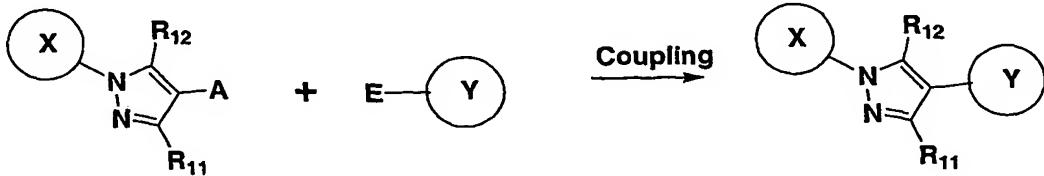
Scheme 1



Thus in Scheme 1, ring system X containing a hydrazine moiety (prepared using
 30 synthetic chemistry techniques well known in the art) is reacted with a 1,3-dicarbonyl or its

equivalent in a suitable solvent (*e.g.* EtOH, THF, DME, DMF *etc.*) at a temperature between about 30°C to 150°C for about 1 to 18h to form a substituted pyrazole (see for example Sugiyarto, K. H.; Goodwin, H. A. *Aust.J.Chem.* 1988, 41, 1645-1664). In turn, the 4-position of the pyrazole is derivatized with a functional group A which is capable of undergoing a metal-catalyzed cross-coupling reaction such as a halogen or trifluoromethanesulfonate and the like. For example, the group A may be a bromide radical which maybe installed using molecular bromine under acidic conditions (see for example Khan, M. A.; Pinto, A. A. A. *J.Heterocycl.Chem.* 1981, 18, 9-14). In turn, the derivatized pyrazole is reacted with a moiety Y under metal-catalyzed cross-coupling conditions (**Scheme 2**)

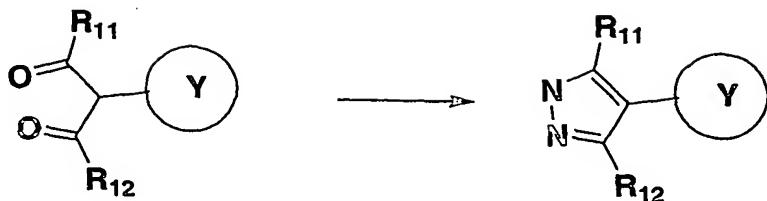
10 **Scheme 2**



E is a metallic or metalloid species such as B(OR)₂, Li, MgHal, SnR₃, ZnHal, SiR₃ and the like which is capable of undergoing a metal-catalyzed cross-coupling reaction. The coupling may be promoted by a homogeneous catalyst such as Pd(PPh₃)₄, or by a heterogeneous catalyst such as Pd on carbon in a suitable solvent (*e.g.* THF, DME, toluene, MeCN, DMF, H₂O *etc.*). Typically a base, such as K₂CO₃, NEt₃, and the like, will also be present in the reaction mixture. Other promoters may also be used such as CsF. The coupling reaction is typically allowed to proceed by allowing the reaction temperature to warm slowly from about 0°C up to ambient temperature over a period of several hours. The resulting reaction mixture is then maintained at ambient temperature, or heated to a temperature between about 30°C to 150°C. The reaction mixture is then maintained at a suitable temperature for a time in the range of about 4 up to 48 hours, with about 18 hours typically being sufficient (see for example Miyaura, N.; Suzuki, A. *Chem. Rev.* 1995, 95, 2457-2483). The product from the reaction can be isolated and purified employing standard techniques, such as solvent extraction, chromatography, crystallization, distillation and the like.

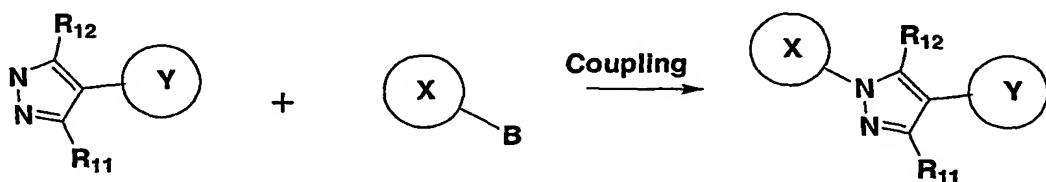
Another embodiment of the present invention is illustrated in **Scheme 3** below.

Scheme 3



Thus a 1,3-dicarbonyl compound substituted at the 2 position with a moiety Y (prepared using synthetic chemistry techniques well known in the art), is condensed with hydrazine in a suitable solvent (e.g. EtOH, THF, DME, DMF etc.), at a temperature between about 30°C to 150°C for about 1 to 18h to form a substituted pyrazole (see for example Brown, D. J.; Cowden, W. B.; Grigg, G. W.; Kavulak, D. *Aust.J.Chem.*, 1980, 33, 2291-2298).

Scheme 4



As shown in Scheme 4, the pyrazole may then be coupled with a species X 10 substituted with a group B. B maybe a metalloid species such as B(OR)₂, BiLn and the like and the reaction maybe promoted with stoichiometric or catalytic amounts of metal salts such as Cu(OAc)₂, CuI or CuOTf and the like. Typically, a base (e.g. pyridine, NEt₃, Cs₂CO₃, K₂CO₃ etc.) will also be present and the reaction carried out in a suitable solvent (e.g. DCM, THF, DME toluene, MeCN, DMF, H₂O etc.). Additionally, molecular sieves maybe used as a cocatalyst.

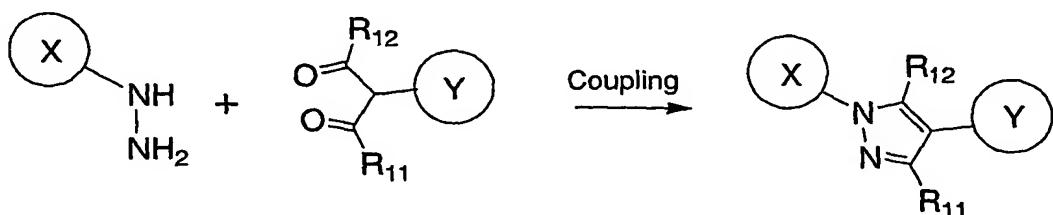
Alternatively, B may be a halogen or other functional group capable of undergoing a metal catalyzed N-arylation cross-coupling reaction. In that case, additional promoters such as 1,10-phenanthraline and dibenzylideneacetone may also be added to the reaction mixture. The cross-coupling reaction maybe carried out at ambient temperature or heated to a temperature anywhere between about 30°C to 150°C. The resulting reaction mixture 20 is then maintained at a suitable temperature for a time in the range of about 4 up to 72 hours, with 18 hours typically being sufficient (see for example Lam, P. Y. S.; Clark, C. G.; Saubern, S.; Adams, J.; Winters, M. P.; Cham, D. M. T.; Combs, A. *Tetrahedron Lett.* 1998, 39, 2941-2944 and Kiyomori, A.; Marcoux, J. F.; Buchwald, S. L. *Tetrahedron Lett.* 1999, 40, 2657-2660). The product from the reaction can be isolated and purified employing standard 25 techniques, such as solvent extraction, chromatography, crystallization, distillation and the like.

In another embodiment of the present invention when B is a good aryl leaving group such as F, and X is electron deficient or has one or more electron withdrawing substituents

(e.g. NO_2 , CN), the coupling reaction may be effected thermally in a temperature range of about 60°C up to about 250°C. Typically this reaction is carried out in the presence of base (e.g. pyridine, NEt_3 , Cs_2CO_3 , K_2CO_3 etc.) in a suitable solvent, such as DMSO, DMF, DMA, H_2O and the like, and takes from about 1h up to about 72h with 18 hours typically being sufficient (see for example Russell, S. S.; Jahangir; *Synth. Commun.* 1994, 24, 123-130).

Another embodiment of the present invention is illustrated in **Scheme 5**.

Scheme 5



Thus a 1,3-dicarbonyl compound substituted at the 2 position with a moiety Y
 10 (prepared using synthetic chemistry techniques well known in the art (see for example Fox, J. F.; Huang, X.; Chieffi, A.; Buchwald, S. L. *J. Am. Chem. Soc.* 2000, 122, 1360–1370) is condensed with a species X substituted with a hydrazine functional group in a suitable solvent (e.g. EtOH, THF, DME, DMF, H_2O etc.) at a temperature between about 30°C to 150°C for about 1 to about 24h to form a substituted pyrazole (see for example Pawar, R. A.; *Heterocycles*, 1984, 21, 568).
 15 Another embodiment of the present invention is illustrated in **Scheme 6**.

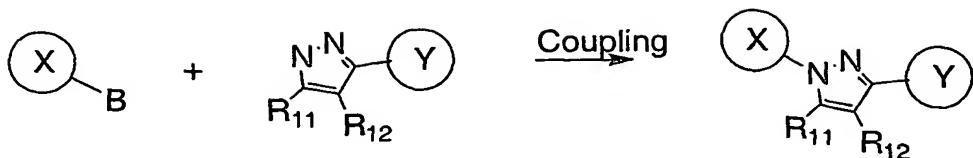
Scheme 6



Thus, a species Y substituted with a 3-dimethylamino-2,3-unsaturated ketone is prepared using synthetic chemistry techniques well known to those skilled in the art (see for example Kepe, V.; Kocevar, M.; Polanc, S. *J. Heterocyclic Chem.* 1996, 33, 1707-1710). The homologated amide species is heated with hydrazine in a suitable solvent (e.g. EtOH, THF, DME, DMF, H_2O etc.) at a temperature between about 30°C to 150°C for about 1h up to about 24h to form a pyrazole substituted with Y (see for example Wang, F.; Schwabacher, A. W. *Tetrahedron Lett.* 1999, 40, 4779-4782).

As shown in **Scheme 7**, the pyrazole may then be coupled with a ring system X substituted with a functional group B.

Scheme 7

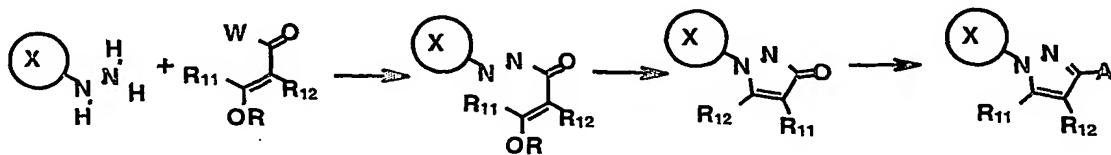


B may be a metalloid species such as B(OR)₂, BiLn and the like and the reaction maybe promoted with stoichiometric or catalytic metal salts such as Cu(OAc)₂, CuI, or CuOTf and the like. Typically, a base (e.g. pyridine, NEt₃, Cs₂CO₃, K₂CO₃ etc.) will also be present and 5 the reaction carried out in a suitable solvent (e.g. DCM, THF, DME, MeCN, DMF, H₂O etc.). Additionally, molecular sieves maybe used as a cocatalyst. Alternatively B may be a halogen or other functional group capable of undergoing a metal catalyzed N-arylation cross-coupling reaction. In which case, additional promoters such as 1,10-phenanthrolene and 10 dibenzylideneacetone may also be added to the reaction mixture. The cross-coupling reaction maybe carried out at ambient temperature or heated to a temperature between about 30°C to 150°C. The reaction mixture is then maintained at a suitable temperature for a time in the range of about 4 up to 72 hours, with 18 hours typically being sufficient (see for example Lam, P. Y. S.; Clark, C. G.; Saubern, S.; Adams, J.; Winters, M. P.; Cham, D. M. T.; Combs, A. 15 *Tetrahedron Lett.* 1998, 39, 2941-2944 and Kiyomori, A.; Marcoux, J. F.; Buchwald, S. L. *Tetrahedron Lett.* 1999, 40, 2657-2660). The product from the reaction can be isolated and purified employing standard techniques, such as solvent extraction, chromatography, crystallization, distillation and the like.

In another embodiment of the present invention, when B is a good aryl leaving group such as F, and X is electron deficient or has one or more electron withdrawing substituents 20 (e.g. NO₂, CN etc.), the coupling reaction may be effected thermally in a temperature range of about 60°C up to about 250°C. Typically, this reaction is carried out in the presence of base (e.g. pyridine, NEt₃, Cs₂CO₃, K₂CO₃ etc.) in a suitable solvent, such as DMSO, DMF, DMA H₂O and the like, and takes from about 1h up to about 72h with 18 hours typically being sufficient (see for example (see for example Russell, S. S.; Jahangir; *Synth. Commun.* 1994, 24, 123-130)).

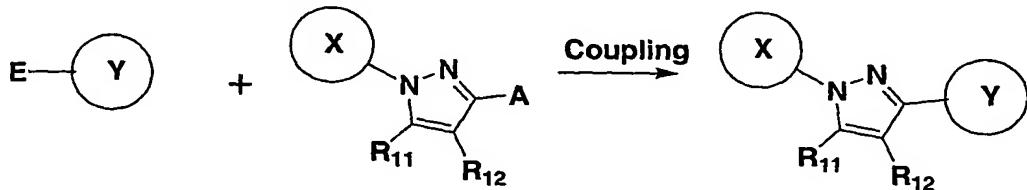
25 Another embodiment of the present invention is illustrated in Scheme 8.

Scheme 8



Thus, moiety X substituted with a hydrazine functional group (prepared using synthetic chemistry techniques well known in the art) is reacted with an activated acyl enol ether moiety in a suitable solvent (e.g. THF, DME, DMF, Et₂O etc.) to form a pendant enol hydrazide. In Scheme 8, the leaving group W can be halogen, OR, SR etc. or if W = OH, the reaction is effected using typical peptide-coupling conditions (e.g using EDC etc.) that are well known to those skilled in the art at a temperature between about 0°C to 100°C for about 1h to 18h. Under acidic conditions, the pendant enol hydrazide cyclizes to form the corresponding pyrazolidone (see for example Shi, G.; Wang, Q.; Schlosser, M. *Tetrahedron* 1996, 52, 4403-4410). This is then converted to a pendant pyrazole substituted at the 3 position with a group A where A is a functional group capable of undergoing a metal-catalyzed cross-coupling reaction. For example, A may be trifluoromethanesulfonate, halogen, acyloxy, alkyl- or arylsulfonate, alkyl- or arylsulfinate, alkyl- or arylsulfide, phosphate, phosphinate and the like.

15

Scheme 9

As shown in Scheme 9, the pyrazole from Scheme 8 can be coupled with a ring system Y substituted with a group E where E is a metallic or metalloid species such as B(OR)₂, Li, MgHal, SnR₃, ZnHal₂, SiR₃ and the like which is capable of undergoing a metal-catalyzed cross-coupling reaction.. The coupling may be promoted by a homogeneous catalyst such as Pd(PPh₃)₄, or by a heterogeneous catalyst such as Pd on carbon in a suitable solvent, such as THF, DME, MeCN, DMF, H₂O and the like. Typically, a base (e.g. K₂CO₃ NEt₃, etc.) will also be present in the reaction mixture. Other promoters may also be used such as CsF. The coupling reaction is typically allowed to proceed by allowing the reaction temperature to warm slowly from about 0°C up to ambient temperature over a period of several hours. The reaction mixture is then maintained at ambient temperature, or heated to a temperature between about 30°C to 150°C. The reaction mixture is then maintained at a suitable temperature for a time in the range of about 4 up to 48 hours, with about 18 hours typically being sufficient. The product from the reaction can be isolated and purified employing standard techniques, such as solvent

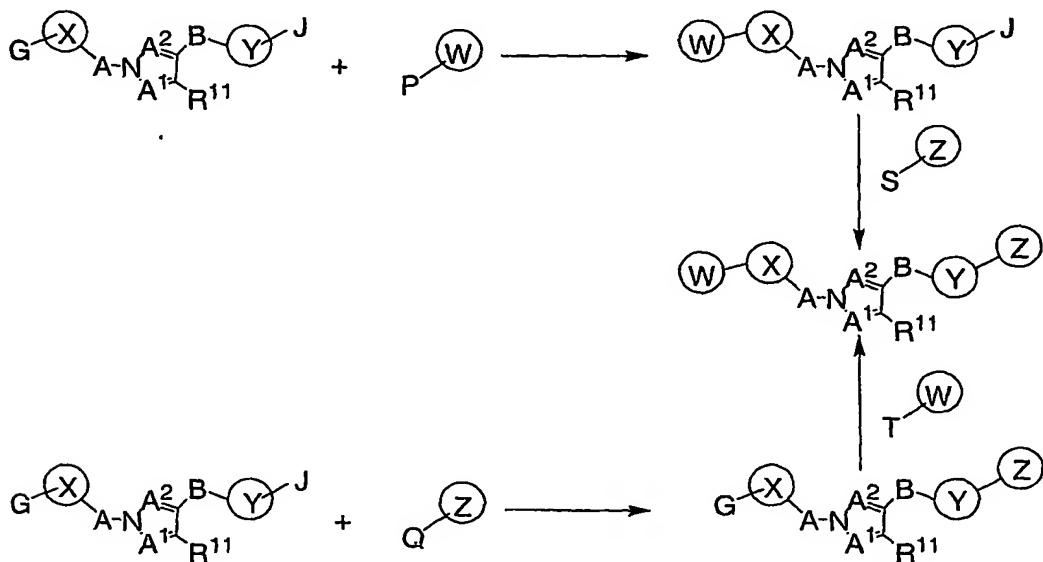
extraction, chromatography, crystallization, distillation and the like (see for example Miyaura, N.; Suzuki, A. *Chem. Rev.* **1995**, *95*, 2457-2483).

In the schemes above, ring systems X and/or Y may already contain a pendant ring W and/or Z. However, if required, ring systems W and/or Z may be appended to X and/or Y respectively where G and/or J are functional groups capable of undergoing a metal catalyzed-cross coupling (such as halogen, trifluoromethane-sulfonate, B(OR)₂, ZnX, SnR₃, and the like - Scheme 10 below). Ring systems W and Z are substituted with groups P, Q, S and T which may be for example, halogen, trifluoromethanesulfonate, B(OR)₂, ZnX, SnR₃, and the like.

Typically, a transition metal catalyst such as Pd(PPh₃)₄, Pd(PPh₃)₂Cl₂, Pd(OAc)₂, NiCl₂(dppe), Pd(OAc)₂, Pd₂(dba)₃, Cu(OAc)₂, CuI or the like may be employed, typically along with a suitable base such as K₂CO₃, K₃PO₄, Cs₂CO₃, Et₃N, pyridine or the like. Additionally, ligands such as BINAP, di-*tert*-butyl phosphinobiphenyl, di-cyclohexylphosphino biphenyl, tri *tert*-butylphosphine, XANTPHOS, triphenylarsine and the like may be added. The reaction is carried out in a suitable solvent such as toluene, DME, dioxane, THF, water or a combination of the above and is typically heated at 50°C – 150°C for between 1 and 48 hrs. The reaction may be homogeneous or heterogeneous (see for example Miyaura, N.; Suzuki, A. *Chem. Rev.* **1995**, *95*, 2457-2483 and Dai, C.; Fu, G.C. *J. Am. Chem. Soc.*, **2001**, *123*, 2719-2724 and Littke, A.F.; Fu, G.C. *Angew. Chem. Int. Ed.* **1999**, *38*, 6, 2411-2413 and Dai, C; Fu, G.C. *J. Am. Chem. Soc.* **2001**, *123*, 2719-2724).

20

Scheme 10



Alternatively ring systems W or Z may be a nitrogen containing heterocycle wherein the nitrogen is directly attached to the ring system X or Y respectively. In this case G and/or J are groups capable of undergoing a metal catalyzed N-aryl cross-coupling (such as halogen, trifluoromethane-sulfonate, B(OR)₂, ZnX, SnR₃, and the like – Scheme 10). Typically 5 a transition metal such as CuI, Cu(OAc)₂, Cu(OTf)₂, Pd(PPh₃)₄, Pd(PPh₃)₂Cl₂, Pd(OAc)₂, Pd₂(dba)₃, NiCl₂(dppe) is used along with a suitable base such as K₂CO₃, K₃PO₄, Cs₂CO₃, NaOtBu or the like. Additionally, phosphine containing ligands such as BINAP, di-*tert*-butyl phosphinobiphenyl, di-cyclohexylphosphino biphenyl, tri *tert*-butylphosphine, XANTPHOS and the like may be added. Further, additives such as 1,10-phenanthroline, 1,2-diaminocyclohexane, .0 dibenzylideneacetone may be used. The reaction is typically carried out in a solvent such as toluene, DME, dioxane, THF, water or a combination of the above and is typically heated at 50°C – 150°C for between 1 and 48 hrs. The reaction may be homogeneous or heterogeneous. The product from Scheme 10, can be isolated and purified employing standard techniques, such 15 as solvent extraction, acid-base extraction, chromatography, crystallization, distillation and the like (see for example Lam, P. Y. S.; Clark, C. G.; Saubern, S.; Adams, J.; Winters, M. P.; Cham, D. M. T.; Combs, A. *Tetrahedron Lett.* **1998**, *39*, 2941-2944 and Kiyomori, A.; Marcoux, J. F.; Buchwald, S. L. *Tetrahedron Lett.* **1999**, *40*, 2657-2660 and Wolfe, J.P.; Tomori, H.; Sadighi, J.P.; Yin, J.; Buchwald, S.L. *J. Org. Chem.*, **2000**, *65*, 1158-1174 and Yin, J.; Buchwald, S.L.; *Org. Lett.*, **2000**, *2*, 1101-1104).

20 In addition, many of the heterocyclic compounds described above can be prepared using other synthetic chemistry techniques well known in the art (see *Comprehensive Heterocyclic Chemistry*, Katritzky, A. R. and Rees, C. W. eds., Pergamon Press, Oxford, 1984) and references cited there within.

25

COMPOUND 1

Synthesis of 2-(1*H*-pyrazol-4-yl)pyridine

Hydrazine hydrate (395.6 mg, 6.7 mmol) and 2-(2-pyridyl)malondialdehyde (1.0 g, 6.7 mmol) were dissolved in ethanol (20 mL). The reaction mixture was heated at 75°C overnight. The reaction mixture was allowed to cool to ambient temperature. TLC analysis 30 showed no starting present. The mixture was concentrated in vacuo to afford a dark solid. The crude product was crystallized from 4:6 EtOAc: Hexane to afford 2-(1*H*-pyrazol-4-yl)pyridine (600 mg, 60% yield) as a yellow solid. MS 147.1 (M⁺+H).

COMPOUND 2

Synthesis of 2-[1-(3-bromo-5-chlorophenyl)-1*H*-pyrazol-4-yl]pyridine

2-(1*H*-pyrazol-4-yl)pyridine (2.0 g, 13.7 mmol), 1-bromo-3-chloro-5-flurobenzene(2.8 g, 13.7 mmol), potassium carbonate (3.8 g, 27.4 mmol) were combined in DMF (30 mL) under argon. The reaction mixture was heated at 140°C overnight. The reaction mixture was allowed to cool to ambient temperature. TLC analysis showed no starting present.

5 The reaction mixture was diluted with EtOAc (300 mL), and washed with H₂O (3 X 300 mL), brine (100 mL), dried over Na₂SO₄, filtered, and concentrated in vacuo to afford a dark oil which solidified when pumped down under high vacuum. The crude product was purified by column chromatography eluting with 2:8 EtOAc: Hexane to afford 2-[1-(3-bromo-5-chlorophenyl)-1*H*-pyrazol-4-yl]pyridine (1.5 g, 45% yield) as a yellow solid. ¹H NMR (CDCl₃, 300 MHz): δ 8.61-0.86 (d, J=6Hz, 1H), 8.49 (s, 1H), 8.20 (s, 1H), 7.87-7.89 (d, J=6Hz, 1H), 7.71-7.78 (m, 2H), 7.55-7.58 (d, J=9Hz, 1H), 7.46 (s, 1H), 7.18-7.22 (m, 1H). MS 336.1 (M⁺+2H).

EXAMPLE 1

Synthesis of 2-[1-(3-chloro-5-pyridin-3-ylphenyl)-1*H*-pyrazol-4-yl]pyridine

15 2-[1-(3-bromo-5-chlorophenyl)-1*H*-pyrazol-4-yl]pyridine (600 mg, 1.79 mmol), pyridin-3-ylboronic acid (221 mg, 1.79 mmol), potassium carbonate (373 mg, 2.7 mmol) were combined in toluene:methanol (20:2 mL) under argon and Pd(PPh₃)₄ (208 mg, 0.18 mmol) was added and the argon flow was continued for 10min. The reaction mixture was heated at 70°C overnight. The reaction mixture was allowed to cool to ambient temperature. TLC analysis showed no starting present. The reaction mixture was diluted with EtOAc (100 mL), and washed with H₂O (3 X 100 mL), brine (100 mL), dried over Na₂SO₄, filtered, and concentrated in vacuo to afford a dark oil which solidified when pumped down under high vacuum. The crude product was purified by column chromatography eluting with 7:3 EtOAc: Hexane to afford 2-[1-(3-chloro-5-pyridin-3-ylphenyl)-1*H*-pyrazol-4-yl]pyridine (470 mg, 80% yield) as a yellow solid.

20 25 ¹H NMR (CDCl₃, 300 MHz) δ: 9.97 (s, 1H), 9.47 (s, 1H) 8.99-9.02 (d, J=9.0Hz, 1H), 8.94-8.96 (d, J=6.0Hz, 1H), 8.86 (s, 1H), 8.72-8.74 (d, J=6.0Hz, 1H), 8.45 (s, 1H), 8.40-8.42 (d, J=6.0Hz, 1H), 8.29-8.32 (d, J=9.0Hz, 1H), 8.10-8.14 (t, 2H), 8.06 (s, 1H), 7.70-7.74 (t, 1H). MS 333.0 (M⁺+H).

COMPOUND 3

Synthesis of 2-(1*H*-pyrazol-3-yl)pyridine

2-(1*H*-Pyrazol-3-yl)pyridine was prepared according to the method of Pleier, A.-K.; Glas, H.; Grosche, M.; Sirsch, P.; Thiel, W. R.; Synthesis 2001, (1), 55-62.

COMPOUND 4

Synthesis of 3-fluoro-5-(3-pyridin-2-yl-1H-pyrazol-1-yl)benzonitrile

To a mixture of 2-(1*H*-pyrazol-3-yl)pyridine (199 mg, 1.37 mmol), difluorobenzonitrile (286 mg, 2.06 mmol) and potassium carbonate (644 mg, 4.7 mmol) was added DMF (3 mL) in a microwave reaction vessel. The suspension was capped and heated to 5 200°C for 5min. using microwave irradiation. The mixture was then diluted with water (5 mL) and extracted twice with ethyl acetate (2 X 50 mL) and dried with sodium sulfate. After concentration the mixture was purified by silica gel flash chromatography eluting with ethyl acetate/hexanes to give 150 mg of the product as an off-white solid.

EXAMPLE 2**Synthesis of 2-[1-[3-fluoro-5-(2*H*-tetraazol-5-yl)phenyl]-1*H*-pyrazol-3-yl]pyridine**

Zinc bromide (45 mg, 0.20 mmol) and sodium azide (52 mg, 0.80 mmol) were added to a solution of the 3-fluoro-5-(3-pyridin-2-yl-1*H*-pyrazol-1-yl)benzonitrile (105 mg, 0.40 mmol) in isopropanol (0.5 mL) and water (1.0 mL). The mixture was heated to reflux for 12 15 hours at which time the reaction was determined to be complete by TLC. The heterogeneous mixture was concentrated and then dissolved in DMSO/MeCN and purified by preparative reverse phase HPLC (MeCN/water/trifluoroacetic acid buffer). The fractions containing the desired product were lyophilized to give 44 mg of the desired product as the trifluoroacetate salt.
20 ¹H NMR (DMSO-d₆): δ 8.80 (s, 1H), 8.70 (s, 1H), 8.56 (s, 1H), 8.23 (d, 1H), 8.11 (d, 1H), 8.04 (t, 1H), 7.81 (d, 1H), 7.51 (m, 1H), 7.25 (s, 1H), 4.50-6.00 (br, 1H). MS (EI) *m/z* 308.05 (M⁺+H).

COMPOUND 5**Synthesis of 2-(1*H*-pyrazol-1-yl)pyridine**

25 2-Hydrazinopyridine (7.6 g, 70 mmol), malondialdehyde-bis-(dimethylacetal) (11.5 mL, 70 mmol) and HCl (10 M, 7 mL) in EtOH (100 mL) were heated at 75°C. After 2h, the resulting reaction mixture was cooled to ambient temperature and concentrated *in vacuo* to a give a brown solid. This was suspended in H₂O (100 mL) and EtOAc (100 mL), and NaHCO₃ added until there was no further effervescence. The EtOAc layer was then separated and the 30 aqueous layer shaken with EtOAc (3 X 100 mL). The combined organic layers were dried over Na₂SO₄ and concentrated to afford 2-(1*H*-pyrazol-1-yl)pyridine as a brown oil which was used without further purification. MS (ESI) 147 (M⁺+H).

COMPOUND 6**Synthesis of 2-(4-iodo-1*H*-pyrazol-1-yl)pyridine**

To a solution of 2-(1*H*-pyrazol-1-yl)pyridine (300 mg, 2.1 mmol) in anhydrous acetonitrile was added ceric ammonium nitrate (658 mg, 1.2 mmol) and iodine (305 mg, 1.2 mmol) at room temperature. The resulting suspension was stirred for 12 hr at room temperature. The reaction was stopped by rotovap evaporation of the acetonitrile. The residue was diluted 5 with EtOAc (100 mL) and washed with a cold solution of 5% NaHSO₃ (50 mL) and brine (50 mL). The organic phase was dried (Na₂SO₄), filtered, and concentrated *in vacuo*. The crude residue was purified by silica gel chromatography, eluting with 10% EtOAc/hexane, to afford 2-(4-iodo-1*H*-pyrazol-1-yl)pyridine as white solid. ¹H NMR (CDCl₃, 500 MHz): δ 8.63 (s, 1H), 8.40-8.39 (m, 1H), 7.94-7.92 (m, 1H), 7.83-7.80 (m, 1H), 7.72 (s, 1H), 7.21-7.17 (m, 1H).

10

COMPOUND 7

Synthesis of 2-[4-(3-bromo-5-chlorophenyl)-1*H*-pyrazol-1-yl]pyridine

To a solution of 2-(4-iodo-1*H*-pyrazol-1-yl)pyridine (1.0 g, 3.7 mmol) in DMSO (21 ml) was added bis(pinacolat)diborane (1.0 g, 4.1 mmol), and potassium acetate (1.1 g, 11.1 mmol). The resulting mixture was purged with nitrogen for 10 min. Dichloro[1,1'-bis(diphenylphosphino)ferrocene]palladium (III) dichloromethane adduct (90 mg, 0.1 mmol) was added to the reaction mixture and the mixture was heated to 80° C for 12hr. The reaction mixture was allowed to cool to room temperature before dilution with benzene (200 mL), washed with water and brine. The organic layer was dried over Na₂SO₄, filtered, and 15 concentrated *in vacuo*. The crude residue was purified by silica gel chromatography, eluting with 10-40% EtOAc/hexanes, to afford 2-[4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)-1*H*-pyrazol-1-yl]pyridine as white solid.

To a solution of 2-[4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)-1*H*-pyrazol-1-yl]pyridine (440 mg, 1.6 mmol) in DMF (53 mL) was added 1,3-dibromo-5-chlorobenzene (649 mg, 2.4 mmol) and potassium phosphate (679 mg, 3.2 mmol). The resulting mixture was purged with nitrogen for 10 min. Tetrakis(triphenylphosphine) palladium (92 mg, 0.1 mmol) was then added to the mixture and the reaction mixture was heated to 95°C for 12hr. The reaction mixture was allowed to cool to room temperature, diluted with EtOAc (100 mL), and washed with water and brine. The organic layer was dried over Na₂SO₄, filtered, and concentrated *in vacuo*. The 20 crude residue was purified by silica gel chromatography, eluting with 20% EtOAc/hexanes, to afford 2-[4-(3-bromo-5-chlorophenyl)-1*H*-pyrazol-1-yl]pyridine. ¹H NMR (CDCl₃, 500MHz): δ 8.88 (s, 1H), 8.47-8.46 (m, 1H), 8.04-8.00 (m, 2H), 7.89-7.86 (m, 1H), 7.65 (s, 1H), 7.54 (m, 1H), 7.44-7.43 (m, 1H), 7.39-7.35 (m, 1H). MS (ESI) 333.9 (M⁺).

35

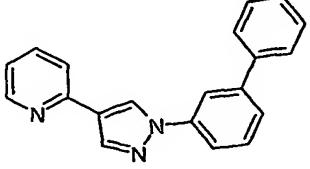
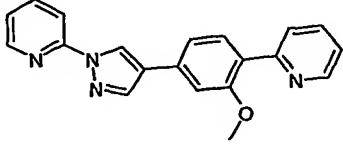
EXAMPLE 3

Synthesis of 2-[4-(3-chloro-5-pyridin-3-ylphenyl)-1*H*-pyrazol-1-yl]pyridine

To a solution of 2-[4-(3-bromo-5-chlorophenyl)-1*H*-pyrazol-1-yl]pyridine (115 mg, 0.34 mmol) in DMF (1.7 mL) was added pyridin-3-ylboronic acid (127 mg, 1.0 mmol), and potassium phosphate (159 mg, 0.8 mmol). The resulting mixture was purged with nitrogen for 10 min. Tetrakis(triphenylphosphine) palladium (20 mg, 0.02 mmol) was added to the mixture and the reaction mixture was heated to reflux for 16 hr. The reaction mixture was allowed to cool to room temperature, diluted with EtOAc (100 mL), and washed with water and brine. The organic layer was dried over Na₂SO₄, filtered, and concentrated *in vacuo*. The crude residue was purified by silica gel chromatography, eluting with 30% EtOAc/hexanes, to afford 1-[3-chloro-5-(1-pyridin-2-yl-1*H*-pyrazol-4-yl)phenyl]-1*H*-pyrrolo[2,3-*c*]pyridine as white solid. ¹H NMR (CDCl₃): 8.92 (s, 1H), 8.89-8.88 (d, 1H), 8.68-8.67 (m, 1H), 8.47-8.45 (m, 1H), 8.06-8.03 (m, 2H), 7.93-7.91 (m, 1H), 7.88-7.86 (m, 1H), 7.66 (d, 1H), 7.63-7.62 (m, 1H), 7.47-7.46 (m, 1H), 7.43-7.41 (m, 1H), 7.26-7.23 (m, 1H). MS: 333.1 (M⁺+H).

EXAMPLE 4 to EXAMPLE 7 shown below were prepared similarly to the schemes and procedures described above and below for examples 1 to 3 (ND = not determined).

EXAMPLE	Structure	¹ H NMR (δ)	MS (ESI)
4		9.57 (s, 1H), 9.37 (s, 1H), 9.07-9.07 (d, 1H), 8.92-8.90 (d, 1H), 8.74-7.72 (d, 1H), 8.61-8.56 (m, 2H), 8.47-8.43 (m, 2H), 8.26-8.21 (m, 1H), 8.12-8.09 (m, 1H), 7.92-7.86 (m, 2H), 7.81-7.76 (m, 1H).	MS (M ⁺ +H) 299.1
5		9.53 (s, 1H), 9.10-8.89 (d, 1H), 8.76-8.74 (d, 1H), 8.67-8.58 (m, 4H), 8.49-8.43 (m, 2H), 8.24-8.21 (d, 1H), 8.05-8.02 (m, 2H), 7.91-7.84 (m, 2H).	MS (M ⁺ +H) 299.1

6		9.66 (s, 1H), 8.70-8.69 (m, 2H), 8.47-8.40 (m, 1H), 8.32-8.29 (d, 1H), 8.09 (d, 1H), 7.85-7.83 (m, 1H), 7.75-7.72 (m, 3H), 7.68-7.62 (m, 2H), 7.51-7.46 (m, 2H), 7.42-7.40 (m, 1H).	MS ($M^+ + H$) 298.1
7		9.19 (s, 1H), 8.82-8.81 (m, 1H), 8.68-8.64 (m, 1H), 8.52-8.51 (m, 1H), 8.37-8.34 (m, 2H), 8.05-7.99 (m, 3H), 7.80-7.89 (m, 1H), 7.62-7.59 (m, 2H), 7.39-7.37 (m, 1H), 4.11 (s, 3H)	MS: 329.1 ($M^+ + H$)

Examples 8-33 have mGluR5 inhibitory activity > 2 μ M in the calcium flux assay.

COMPOUND 8

Synthesis of 2-bromo-6-hydrazinopyridine

2,5-dibromopyridine (2.0 g, 8.2 mmol) was dissolved in dioxane (10 mL) and hydrazine hydrate (0.498 g, 8.2 mmol) was added and heated to 80°C over night. The reaction mixture was allowed to cool to ambient temperature. TLC analysis showed no starting present. The reaction mixture was concentrated in vacuo to afford a dark oil. The crude product was purified by column chromatography eluting with 1:1 EtOAc : Hexane to afford 2-bromo-6-hydrazinopyridine (1.5 g, 99 % yield) as a yellow oil.). MS (ESI) 189.9 ($M^+ + H$).

COMPOUND 9

Synthesis of 2-bromo-6-(4-pyridin-2-yl-1H-pyrazol-1-yl)pyridine

2-bromo-6-hydrazinopyridine (500 mg, 2.7 mmol) and 2-(2-pyridyl)malondialdehyde (403 mg, 2.7 mmol) were dissolved in ethanol (10 mL). The reaction mixture was heated at 65°C overnight. The reaction mixture was allowed to cool to ambient temperature. TLC analysis showed no starting present. The mixture was concentrated in vacuo to afford a dark oil. The crude product was purified by column chromatography eluting with 1:4 EtOAc: Hexane to afford 2-bromo-6-(4-pyridin-2-yl-1H-pyrazol-1-yl)pyridine (550 mg, 69%

yield) as a yellow solid. ^1H NMR (CDCl_3 , 300 MHz) δ 9.04 (s, 1H), 8.61-8.62 (d, $J=3\text{Hz}$, 1H), 8.27 (s, 1H), 7.95-7.97 (d, $J=6.0\text{Hz}$, 1H), 7.7-7.57 (m, 3H), 7.37-7.39 (d, $J=6.0\text{Hz}$, 1H), 7.15-7.19 (m, 1H). MS (ESI) 303.0 ($M^++2\text{H}$).

5

EXAMPLE 8

Synthesis of 6-(4-pyridin-2-yl-1*H*-pyrazol-1-yl)-2,3'-bipyridine

2-bromo-6-(4-pyridin-2-yl-1*H*-pyrazol-1-yl)pyridine (300 mg, 1.0 mmol), pyridin-3-ylboronic acid (246 mg, 2.0 mmol), potassium carbonate (207 mg, 1.5 mmol) were combined in toluene:methanol (20/2 mL) under argon and $\text{Pd}(\text{PPh}_3)_4$ (116 mg, 0.1 mmol) was added and the argon flow was continued for 10 min. The reaction mixture was heated at 70°C overnight. The reaction mixture was allowed to cool to ambient temperature. TLC analysis showed no starting present. The reaction mixture was diluted with EtOAc (100 mL), and washed with H_2O (3 X 100mL), brine (100 mL), dried over Na_2SO_4 , filtered, and concentrated in vacuo to afford a dark oil which partially solidified when pumped down under high vacuum. The crude product was purified by column chromatography eluting with 8:2 EtOAc: Hexane to afford 6-(4-pyridin-2-yl-1*H*-pyrazol-1-yl)-2,3'-bipyridine (185 mg, 62% yield) as a yellow solid. ^1H NMR (CDCl_3 , 300 MHz): δ 9.52 (s, 1H), 9.70 (s, 1H), 9.13-9.15 (d, $J=6.0\text{Hz}$, 1H), 8.89 (s, 1H), 8.71 (s, 1H), 8.24-8.31 (m, 5H), 8.06-8.09 (m, 1H), 7.96-7.98 (m, 1H), 7.62-7.64 (m, 1H). MS 300.1 ($M^++\text{H}$).

20

COMPOUND 10

Synthesis of 3-dimethylamino-1-pyridin-2-yl-propenone

A mixture of 2-acetylpyridine (25 mL, 222 mmol) and dimethylformamidedimethyl acetal (36 mL, 271 mmol) was heated at 110°C for 2hrs. The crude mixture was diluted to 400 mL with hexanes while stirring resulting in orange precipitate. The precipitate was filtered and washed with hexanes to yield the desired product as an orange solid (20 g, 51%). ^1H NMR (DMSO-d_6): δ 88.63 (m, 1H), 7.99 (d, $J=7.8\text{Hz}$, 1H), 7.91 (ddd, $J=7.8, 7.8, 1.8\text{Hz}$, 1H), 7.80 (d, $J=12.5\text{Hz}$, 1H), 7.50 (m, 1H), 6.38 (d, $J=12.5\text{Hz}$, 1H), 3.18 (s, 3H), 2.92 (s, 3H); ^{13}C NMR (DMSO-d_6): δ 185.1, 156.2, 148.8, 137.5, 126.1, 121.6, 90.5, 45.1, 37.6. MS (EI) m/z 175 (M)⁺.

30

EXAMPLE 9

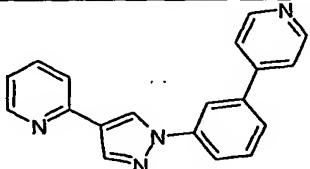
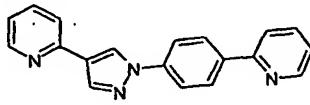
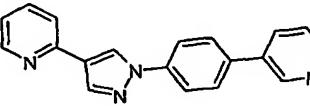
Synthesis of 2-(1-biphenyl-4-yl-1*H*-pyrazol-3-yl)-pyridine hydrochloride

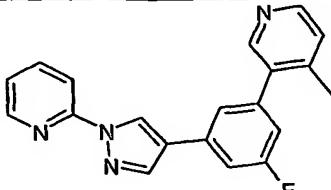
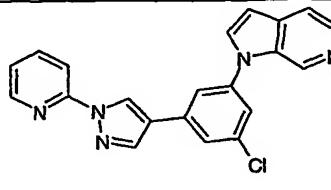
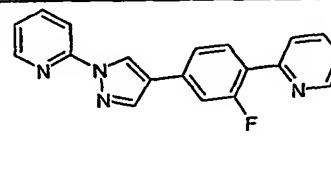
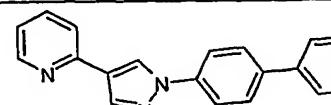
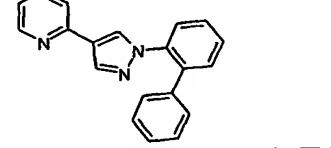
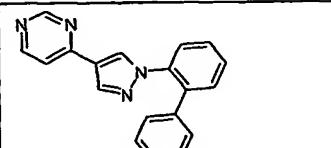
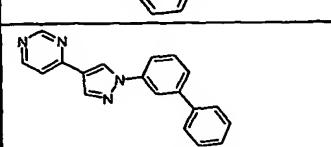
A mixture of 3-dimethylamino-1-pyridin-2-yl-propenone (358 mg, 2.043 mmol), 4-biphenylhydrazine hydrochloride (460 mg, 2.08 mmol), and AcOH (0.23 mL, 4.02 mmol) in EtOH (4 mL) and H_2O (4 mL) was heated at 100°C for 30min. The reaction mixture was cooled

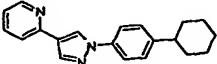
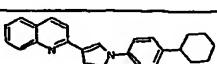
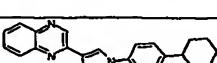
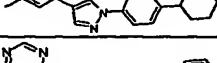
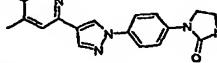
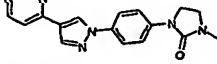
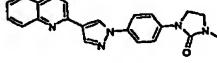
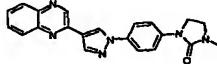
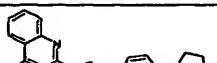
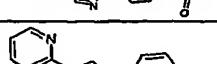
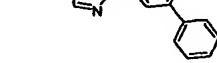
to rt and diluted with EtOAc (70 mL). It was then washed with H₂O (2 X 30 mL), dried over MgSO₄, and treated with charcoal. The solvent was removed *in vacuo* and the crude material was purified on Biotage to yield the desired product as a clear oil (440 mg, 72%). Treatment of the oil with 1N HCl in Et₂O gave HCl salt of the product as a white solid. ¹H NMR (DMSO-d₆): δ 8.65 (d, 1H), 8.03 (t, 1H), 7.88 (s, 1H), 7.73 (t, 4H), 7.55 (m, 2H), 7.45 (t, 2H), 7.35 (d, 3H), 7.03 (s, 1H). MS (EI) m/z 298 (M⁺+H).

EXAMPLE 10 to EXAMPLE 33 shown below were prepared similarly to the schemes and procedures described above (ND = not determined).

10

EXAMPLE	Structure	¹ H NMR (δ)	MS (ESI)
10		9.57 (s, 1H), 8.99-8.96 (m, 2H), 8.76-8.74 (m, 1H), 8.61-8.54 (m, 5H), 8.44-8.41 (d, 1H), 8.22-8.19 (dd, 1H), 8.08-8.05 (d, 1H), 7.89-7.83 (m, 2H).	MS (M ⁺ +H) 299.1
11		8.21 (s, 1H), 7.61-7.59 (d, 1H), 7.49-7.47 (d, 1H), 7.42-7.30 (m, 3H), 7.18-7.16 (d, 2H), 7.00-6.91 (m, 4H), 6.79-6.75 (m, 1H), 6.65-6.60 (m, 1H).	MS (M ⁺ +H) 299.3
12		8.10 (s, 1H), 8.004-7.998 (d, 1H), 7.72-7.70 (d, 1H), 7.60-7.58 (m, 1H), 7.47-7.45 (m, 1H), 7.29-7.26 (d, 2H), 7.14-7.11 (d, 1H), 6.94-6.88 (m, 3H), 6.81-6.78 (d, 2H), 6.61-6.57 (m, 1H).	MS (M ⁺ +H) 299.3

13		8.90 (s, 1H), 8.77-8.76 (d, 1H), 8.46-8.45 (d, 1H), 8.05-8.02 (m, 2H), 7.88-7.84 (m, 1H), 7.82-7.80 (m, 1H), 7.56 (s, 1H), 7.31-7.23 (m, 3H), 7.18-7.16 (m, 1H), 2.65 (s, 3H).	MS: 331.2 (M ⁺ +H)
14		9.26 (s, 1H), 9.16 (s, 1H), 8.51-8.50 (d, 1H), 8.49 (br, 1H), 8.39-8.29 (m, 3H), 8.01-7.97 (m, 4H), 7.71-7.70 (m, 1H), 7.36 (m, 1H), 7.26-7.25 (d, 1H).	MS: 372.1 (M ⁺ +H)
15		8.93 (s, 1H), 8.77-8.76 (d, 1H), 8.48-8.47 (d, 1H), 8.11-8.04 (m, 3H), 7.89-7.86 (m, 1H), 7.81-7.79 (m, 1H), 7.54-7.53 (m, 1H), 7.43-7.41 (m, 1H), 7.30-7.24 (m, 3H).	MS: 317.3 (M ⁺ +H)
16		ND	MS 298 (M ⁺ +H)
17		ND	MS 298 (M ⁺ +H)
18		ND	MS 299 (M ⁺ +H)
19		ND	MS 299 (M ⁺ +H)

20		ND	MS 304 (M ⁺ +H)
21		ND	MS 305 (M ⁺ +H)
22		ND	MS 354 (M ⁺ +H)
23		ND	MS 355 (M ⁺ +H)
24		ND	MS 368 (M ⁺ +H)
25		ND	MS 299 (M ⁺ +H)
26		ND	MS 370 (M ⁺ +H)
27		ND	MS 321 (M ⁺ +H)
28		ND	MS 370 (M ⁺ +H)
29		ND	MS 371 (M ⁺ +H)
30		ND	MS 384 (M ⁺ +H)
31		ND	MS 298 (M ⁺ +H)
32		8.85 (d, 1H), 8.35 (t, 1H), 8.10 (m, 2H), 7.95 (s, 1H), 7.85 (t, 1H), 7.47 (d, 2H), 7.40 (m, 3H), 7.0 (s, 1H).	MS 306.0 (M ⁺ +H).
33		8.900-8.898 (d, 1H), 8.46- 8.44 (m, 1H), 8.08-8.04 (m, 2H), 8.01-7.20 (m, 9H).	MS 298.1 (M ⁺ +H)

Other variations or modifications, which will be obvious to those skilled in the art, are within the scope and teachings of this invention. This invention is not to be limited except as set forth in the following claims.